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SEMIANNUAL GROUNDWATER MONITORING REPORT FOR NOVEMBER 1999

THE MONADNOCK COMPANY
18301 ARENTH AVENUE
CITY OF INDUSTRY, CALIFORNIA

DECEMBER 1999

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

During the November 1999 monitoring event at the Monadnock site, water levels were monitored in all wells and water samples were collected in seven of the eight wells. Groundwater samples were analyzed for VOCs, chromium, cadmium, and cyanide, in addition to 1,4-dioxane, N-nitrosodimethylamine (NDMA), and perchlorate.

The results of the November 1999 monitoring event indicate that the water table is currently at or near the lowest level historically recorded at the site. Potentiometric surface contours continue to demonstrate a west-southwesterly direction of groundwater flow at an average horizontal hydraulic gradient similar to that observed during the August 1999 monitoring event (about 0.009). A downward vertical hydraulic gradient exists, similar to previous monitoring events.

The November 1999 analytical results indicate that the shallow plume of VOC-impacted groundwater beneath the site is oriented in a southwesterly direction. The plume appears to be limited in lateral extent (crossgradient) and extends offsite. The primary VOCs in the plume consist of trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), and tetrachloroethene (PCE). The November 1999 results also indicate that 1,4-dioxane is present in all wells.

Historical VOC concentration trends indicate that VOC levels onsite have declined substantially since monitoring began in July 1986. Concentrations onsite remained generally stable during operation of the groundwater remediation system from 1995 to 1998, but in February 1999 declined to the lowest levels historically recorded since shutdown of the system in June 1998. Concentrations during the August and November 1999 monitoring events indicate that concentrations have increased to the levels previously observed in fall 1998, but remain similar to the concentrations observed during operation of the system. VOC concentrations in offsite well MW-12 have fluctuated appreciably and are currently near the low end of the historical range.

Chromium and cyanide concentrations have historically exceeded Maximum Contaminant Levels (MCLs), primarily in well MW-2, but are currently below MCLs.

1.0 INTRODUCTION

This report presents the results for the November 1999 groundwater monitoring event at the Monadnock Company (Monadnock) facility (Figure 1), conducted by TRW Inc. (TRW) in accordance with the requirements of the California Regional Water Quality Control Board-Los Angeles Region (LARWQCB). This monitoring event is the first of two quarterly events requested by the LARWQCB, in its letter dated October 22, 1999, for the purpose of providing additional data to evaluate TRW's request for onsite groundwater closure.

1.1 Site Background

The Monadnock facility has been used to fabricate fasteners and electronic hardware since 1965. TRW was the owner and operator of the facility from 1968 to 1980. Previous manufacturing processes used at the facility included degreasing, heat treating, and metal plating. Volatile organic compounds (VOCs) and metals associated with these processes have been detected in groundwater beneath the facility. Additional information regarding the site history are provided in the site audit report (McLaren, 1990).

1.2 Hydrogeologic Conditions

The first occurrence of groundwater beneath the site and vicinity is about 30 feet below ground surface within fine-grained materials consisting primarily of silty clay and silty to clayey sand. A coarser grained, gravelly sand occurs below a depth of about 85 feet. Six monitoring wells and the onsite extraction well (MW-2) are completed in the fine-grained deposits to depths between 45 and 60 feet (Table 1). One monitoring well (MW-11) extends into the lower gravelly sand and is completed to a depth of 97 feet. Additional information regarding the site hydrogeologic conditions is presented in the site investigation and groundwater treatment system report prepared by ID Environmental Associates (IDEA, 1995).

1.3 Groundwater Monitoring Program

Four monitoring wells and the extraction well are located onsite, and three monitoring wells are located offsite, as shown on Figure 2. The groundwater monitoring program for the site, which is summarized in Table 1, includes semiannual water-level monitoring and sampling of all seven monitoring wells and the extraction well. Groundwater samples collected during the semiannual events are analyzed for halogenated volatile organics by EPA Method 8010, total chromium and cadmium by EPA Method 6010B, and total cyanide by EPA Method 335.2. Groundwater samples collected during this quarterly event were analyzed for these compounds, as well as 1,4-dioxane by EPA Method 8270M, NDMA by EPA Method 625MOD, and perchlorate by EPA Method 300.

1.4 Groundwater Remediation System

A groundwater remediation system was implemented at the site in November 1995 utilizing shallow well MW-2 for extraction. Further details regarding the system are provided in Section 4.0.

2.0 GROUNDWATER MONITORING ACTIVITIES

2.1 Project Activities During Current Monitoring Period

No additional site investigation or well installation was conducted during this monitoring period.

2.2 Groundwater Monitoring, Sampling, and Analyses

TRW personnel conducted the November 1999 monitoring event. Water levels were measured in all wells on November 1, 1999. Groundwater samples were collected from seven of the eight wells on November 2, 1999. Well MW-1 was not sampled because the well casing has been damaged. TRW's standard field procedures are contained in Appendix A along with copies of the water-level measurement and groundwater purging logs.

3.0 RESULTS

3.1 Water-Level Elevations

Historic water-level elevation data for all monitoring wells are presented in Table 2. The historic data include the measured depths to groundwater and the calculated water-level elevations recorded for each well since June 1994. Potentiometric surface contours generated using the November 1999 water-level elevation data are presented on Figure 2. Hydrographs of water levels versus time in three representative wells located on and downgradient of the site (MW-2, MW-7, and MW-12) are presented on Figure 3.

The November 1999 water-level data indicate that the water table occurs at a depth of about 33 to 35 feet, which represents an increase of about 0.1 to 0.2 feet in most wells since the August 1999 monitoring event. Two wells (MW-2 and MW-12) exhibited decreases of about 0.1 to 0.2 feet since August 1999. Water levels have historically occurred at depths ranging from about 30 to 34 feet and are currently at or near the lowest levels recorded. The direction of groundwater flow in the shallow interval continues to be to the west-southwest at an average horizontal hydraulic gradient of about 0.009, similar to that observed during the August 1999 monitoring event.

A vertical hydraulic gradient in the downward direction exists, as indicated by a water-level elevation difference of greater than one foot between the completion intervals of shallow well MW-8 and deeper well MW-11. A downward vertical gradient has been observed during previous monitoring events, but the magnitude was less than one foot during events prior to August 1999.

3.2 Groundwater Analytical Results

Results of the November 1999 groundwater VOC analyses, in addition to historic results for previous monitoring events, are presented in Table 3. The results for three additional non-VOC compounds analyzed only in November 1999 are presented in Table 4. Total VOC isoconcentration contours were generated using the November 1999 analytical results and are shown on Figure 4. Hydrographs of VOC concentrations vs. time in three representative wells located on and downgradient of the site (MW-2, MW-7, and MW-12) are presented on Figure 5. Copies of the analytical laboratory reports and chain-of-custody forms are contained in Appendix B.

The November 1999 analytical results indicate that the plume of impacted groundwater beneath the site is oriented in a southwesterly direction, similar to the direction of groundwater flow. The axis of the plume is through the area of onsite well MW-2 and offsite well MW-12. The plume is limited in lateral extent, as crossgradient well MW-3 is not impacted, and crossgradient well MW-8 exhibits an appreciably lower concentration of total VOCs, relative to wells MW-2 and MW-12. VOC concentrations attenuate with depth, as deeper well MW-11 exhibits appreciably lower VOC concentrations than nearby shallow wells MW-2 and MW-7. The primary VOCs in the plume consist of trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), and tetrachloroethene (PCE). The results of the additional analyses for 1,4-dioxane, NDMA, and perchlorate indicate that a trace level of perchlorate is present in one well (MW-8) and 1,4-dioxane is present at detectable levels in all wells.

Historical concentration trends indicate that VOC levels onsite have declined substantially since monitoring began in July 1986. Concentrations remained relatively stable from 1995 through 1998, while the groundwater remediation system was in operation, although a temporary increase occurred in early 1998. Following shutdown of the system in June 1998, VOC concentrations onsite declined to the lowest levels historically recorded in February 1999. Concentrations onsite increased in August and November 1999 to the levels previously observed in Fall 1998 (August/September). These concentrations are similar to the concentrations observed during operation of the groundwater remediation system and are consistent with the historical declining trend that has been observed onsite. VOC concentrations in offsite well MW-12, which was installed in 1995, have fluctuated appreciably and are currently near the low end of the historical range. The hydrographs of VOC concentrations versus time in wells MW-2, MW-7, and MW-12 demonstrate this trend (Figure 5).

Historic metals and cyanide results indicate that chromium and cyanide have exceeded MCLs during previous monitoring events. However, these impacts have been observed primarily in well MW-2. Concentrations of both compounds have declined substantially since the mid 1990s and are currently below the MCLs.

3.3 QA/QC Results

Laboratory results for the November 1999 monitoring event were reviewed in accordance with U.S. Environmental Protection Agency (EPA) guidelines for data validation (National Functional Guidelines for Organic Data Review, June 1991). The data validation process consisted of reviewing the laboratory results for the following parameters: 1) completeness of the data package, 2) compliance with EPA-required holding times, 3) surrogate recovery results for each well sample, 4) agreement of dilution factors with reported detection limits, 5) presence or absence of analytes in the equipment, trip, and method blanks, 6) percent recovery and relative percent difference (RPD) results for matrix spike and matrix spike duplicate (MS/MSD) analyses, and 7) percent recovery results for laboratory control samples (LCS).

Results of the data validation indicated that the laboratory data package was complete, no analysis holding times were exceeded, and reported detection limits were consistent with the sample dilution factors. Surrogate recovery results for each well sample were within acceptable limits with the exception of the surrogate recovery results for samples MO110299-4 and -8 for the N-Nitrosodimethylamine (NDMA) analyses. The lab comments state that no NDMA was detected in these samples and that the surrogate is an internal standard used to quantitate NDMA. VOCs were not detected in the trip blank or one of the two equipment blanks. Chloroform was detected at 0.5 µg/L in equipment blank MO110299-4-G. The laboratory method blank results indicate that no detectable concentrations of VOCs, cadmium, chromium, cyanide, NDMA, 1,4-dioxane, or perchlorate were present. The results of the Laboratory Control Samples (LCS) indicate that all percent recoveries for VOCs, cadmium, chromium, 1,4-dioxane, and perchlorate were within acceptable limits. In addition, the results of the MS/MSD pairs for VOCs, metals, and perchlorate all indicated percent recoveries and RPDs within acceptable limits. One LCS and one MS for the NDMA analyses were below acceptable limits. No LCS or MS/MSD results for cyanide were available. RPDs for the following analytes in the duplicate samples were within acceptable limits: chromium 37%, dichlorodifluoromethane 30%, tetrachloroethene 0%, and 1,4-dioxane 65%.

4.0 GROUNDWATER REMEDIATION SYSTEM

The onsite groundwater remediation system is a pump-and-treat system utilizing shallow well MW-2. Extracted groundwater is treated onsite using carbon adsorption and ion exchange units, and is discharged to the onsite storm-drain system under a National Pollution Discharge Elimination System (NPDES) Permit (Permit No. CAD000048934).

The system began operation in November 1995 and operated continuously until June 1998, when well MW-2 sustained damage to the wellhead during site construction activities. The system has been out of service since that time. The system operates at an average flow rate of about 0.6 gallons per minute, and has extracted a total of about 627,000 gallons of groundwater since its startup in 1995. Approximately 2.3 pounds of VOCs were removed from the extracted groundwater.

Additional information regarding the groundwater system are presented in the site investigation and groundwater treatment system report prepared by ID Environmental Associates (IDEA, 1995).

5.0 REFERENCES

IDEA (Id Environmental Associates). 1995. Report of Monitoring Well Installation and Implementation of a Groundwater Remediation System, Monadnock Company Facility, 18301 Arenth Avenue, City of Industry, California. December.

McLaren. 1990. Site Audit of The Monadnock Company at 18301 East Arenth Avenue, City of Industry, California. February.

U.S. Environmental Protection Agency (EPA), 1991. National Functional Guidelines for Organic Data Review. June.

TABLES

TABLE 1

WELL COMPLETIONS AND SAMPLING INFORMATION

Well Number	Screen Interval (feet bgs)	Total Depth (feet bgs)	Top of Casing Elevation	Sampling Schedule (annual quarters)	EPA Test Methods
MW-1	29-49	49	412.68	1st and 3rd	8010 6010B 335.2
MW-2	25-45	45	408.01	1st and 3rd	8010 6010B 335.2
MW-3	24-44	44	408.52	1st and 3rd	8010 6010B 335.2
MW-4	20-60	60	412.95	1st and 3rd	8010 6010B 335.2
MW-7	26-56	56	409.16	1st and 3rd	8010 6010B 335.2
MW-8	26-56	56	409.00	1st and 3rd	8010 6010B 335.2
MW-11	77-97	97	408.93	1st and 3rd	8010 6010B 335.2
MW-12	19-49	49	406.91	1st and 3rd	8010 6010B 335.2

bgs - below ground surface

TABLE 2

HISTORICAL WATER-LEVEL ELEVATION MEASUREMENTS

Well Number	Date Measured	Depth to Water (feet below top of casing)	Top of Casing Elevation [a] (feet, MSL)	Water Surface Elevation [a] (feet, MSL)
MW-1	Jun-94	32.27	412.68	380.41
	Aug-94	32.49		380.19
	Mar-95	31.82		380.86
	Aug-95	31.55		381.13
	Feb-96	32.57		380.11
	Aug-96	32.70		379.98
	Feb-97	32.13		380.55
	Aug-97	32.61		380.07
	Feb-98	32.73		379.95
	Aug-98	NM		NA
	Feb-99	33.26		379.42
	Aug-99	NM		NA
	Nov-99	NM		NA
MW-2	Jun-94	30.25	408.01	377.76
	Aug-94	30.55		377.46
	Mar-95	29.73		378.28
	Aug-95	29.84		378.17
	Feb-96	NM		NA
	Aug-96	NM		NA
	Feb-97	NM		NA
	Aug-97	NM		NA
	Feb-98	NM		NA
	Sep-98*	29.88		378.13
	Feb-99	31.15		376.86
	Aug-99	32.99		375.02
	Nov-99	32.92		375.09
MW-3	Jun-94	30.21	408.52	378.31
	Aug-94	30.74		377.78
	Mar-95	29.86		378.66
	Aug-95	29.94		378.58
	Feb-96	30.89		377.63
	Aug-96	31.05		377.47
	Feb-97	30.39		378.13
	Aug-97	31.00		377.52
	Feb-98	30.94		377.58
	Aug-98	29.20		379.32
	Feb-99	31.35		377.17
	Aug-99	33.21		375.31
	Nov-99	33.00		375.52
MW-4	Jun-94	32.80	412.95	380.15
	Aug-94	32.99		379.96
	Mar-95	32.28		380.67
	Aug-95	32.04		380.91
	Feb-96	33.05		379.90

TABLE 2

HISTORICAL WATER-LEVEL ELEVATION MEASUREMENTS

Well Number	Date Measured	Depth to Water (feet below top of casing)	Top of Casing Elevation [a] (feet, MSL)	Water Surface Elevation [a] (feet, MSL)
	Aug-96	33.17		379.78
	Feb-97	32.57		380.38
	Aug-97	33.10		379.85
	Feb-98	33.23		379.72
	Aug-98	31.05		381.90
	Feb-99	33.35		379.60
	Aug-99	34.43		378.52
	Nov-99	34.52		378.43
MW-7	Jun-94	31.35	409.16	377.81
	Aug-94	31.71		377.45
	Mar-95	31.03		378.13
	Aug-95	30.98		378.18
	Feb-96	32.06		377.10
	Aug-96	32.11		377.05
	Feb-97	31.41		377.75
	Aug-97	32.15		377.01
	Feb-98	31.92		377.24
	Aug-98	30.25		378.91
	Feb-99	32.40		376.76
	Aug-99	34.20		374.96
	Nov-99	33.95		375.21
MW-8	Jun-94	31.25	409.00	377.75
	Aug-94	31.54		377.46
	Mar-95	30.95		378.05
	Aug-95	30.75		378.25
	Feb-96	31.66		377.34
	Aug-96	31.78		377.22
	Feb-97	31.20		377.80
	Aug-97	31.72		377.28
	Feb-98	31.77		377.23
	Aug-98	29.95		379.05
	Feb-99	32.20		376.80
	Aug-99	33.40		375.60
	Nov-99	33.28		375.72
MW-11	Jun-94	31.59	408.93	377.34
	Aug-94	32.07		376.86
	Mar-95	31.26		377.67
	Aug-95	31.28		377.65
	Feb-96	32.13		376.80
	Aug-96	32.35		376.58
	Feb-97	31.65		377.28
	Aug-97	32.30		376.63
	Feb-98	32.25		376.68
	Aug-98	30.40		378.53

TABLE 2

HISTORICAL WATER-LEVEL ELEVATION MEASUREMENTS

Well Number	Date Measured	Depth to Water (feet below top of casing)	Top of Casing Elevation [a] (feet, MSL)	Water Surface Elevation [a] (feet, MSL)
	Feb-99	32.95		375.98
	Aug-99	34.78		374.15
	Nov-99	34.37		374.56
MW-12	Aug-95	30.50	406.91	376.41
	Feb-96	30.70		376.21
	Aug-96	30.95		375.96
	Feb-97	30.00		376.91
	Aug-97	31.23		375.68
	Feb-98	31.10		375.81
	Aug-98	29.78		377.13
	Feb-99	32.00		374.91
	Aug-99	33.77		373.14
	Nov-99	34.00		372.91

(a) - Elevations relative to mean sea level (MSL)
NM - Not Measured
NA - Not Available
* - Water level measured on September 29, 1998.

TABLE 3

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	cis-1,2-DCE (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
Drinking Water Standard	**200**	**32**	**5**	**6**	**0.5**		**100[1]**	**NE**	**5**	**5**	**10**	**50**	**0.2[2]**
MW-1													
Jul-86	<25	NA	NA	NA	NA	ND	NA	ND	<25	<25	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Nov-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Mar-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Sep-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Feb-88	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	NA	NA	NA
Jun-89	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	NA	NA	NA
Jan-90	ND	NA	NA	ND	NA	ND	NA	ND	1.3	ND	NA	NA	NA
Jun-94	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	NA	NA	NA
Aug-94	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<1	7.7	<0.01
Mar-95	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Aug-95	<1	<1	<1	1.5	<1	ND	<1	ND	<1	<1	<5	<10	<0.1
Feb-96	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.2
Aug-96	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Feb-97	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Aug-97	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Feb-98	<1	<1	<1	<1	<1	ND	<1	ND	1.06	<1	<5	<10	<0.01
Aug-98	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Feb-99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-2													
Jul-86	380	NA	NA	NA	NA	ND	NA	ND	310	710	NA	NA	NA
Sep-86	180	NA	NA	NA	NA	ND	NA	ND	600	560	NA	NA	NA
Nov-86	350	NA	NA	NA	NA	ND	NA	ND	770	710	NA	NA	NA
Feb-87	77	NA	NA	NA	NA	ND	NA	ND	190	620	NA	NA	NA
Mar-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Sep-87	12	NA	NA	NA	NA	ND	NA	ND	102	182	NA	NA	NA
Feb-88	25	NA	NA	NA	NA	ND	NA	ND	78	102	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	ND	NA	ND	70	120	NA	NA	NA
Jun-89	ND	NA	NA	180	NA	ND	NA	ND	320	270	NA	NA	NA
Jan-90	7	NA	NA	840	NA	ND	NA	ND	410	460	NA	NA	NA
Jun-94	<1	21	10	120	3.3	ND	2.4	ND	130	590	NA	NA	NA
Aug-94	<1	19	8.6	160	3.4	ND	1.3	ND	100	390	<1	162	0.57
Mar-95	<1	17.5	8.3	176	4.1	ND	2.5	ND	102	330	<5	206	<0.01
Aug-95	<1	<1	5.8	82	2	ND	2.1	ND	12	170	<5	164	1.82
Feb-96	<2.5	3.5	<2.5	98	<2.5	ND	<2.5	ND	69	200	<5	85.6	1.60
Aug-96	<1	5.3	3.6	95	<1	ND	1.1	ND	53	220	<5	60.8	0.25

TABLE 3

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	cis-1,2-DCE (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
Drinking Water Standard	**200**	**32**	**5**	**6**	**0.5**		**100[1]**	**NE**	**5**	**5**	**10**	**50**	**0.2[2]**
Aug-96 Dup	<1	5.5	3.7	97	1.2	ND	1.2	ND	54	220	NA	NA	NA
Feb-97	<1	4.7	2.2	70	1.2	ND	<1	ND	51.8	220	<5	43.4	0.693
Aug-97	<5	<5	<5	160	<5	ND	<5	ND	79	260	<5	42	0.16
Feb-98	<1	6.76	5.65	325	2.89	ND	2.1	ND	152	456	<5	47	0.363
Sep-98*	<0.5	2.9	2.1	89	1.1	ND	<0.5	<0.5	48	190	<5	79	0.42
Feb-99	<0.5	1.2	0.7	26	<1	ND	<0.5	<0.5	14	61	<5	47**	0.18
Aug-99	<0.5	3.2	2.1	77	0.8	ND	1	<0.5	25	140	<0.5	35	0.18
Nov-99	<0.5	5.7	3.6	110	1.2	0.6	1.4	<0.5	49	190	0.7	49	0.22
MW-3													
Jul-86	<5	NA	NA	NA	NA	ND	NA	ND	<5	<5	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Nov-86	6	NA	NA	NA	NA	ND	NA	ND	100	4	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Mar-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Sep-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Feb-88	2	NA	NA	NA	NA	ND	NA	ND	6.2	2.6	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	NA	NA	NA
Jun-89	1	NA	NA	ND	NA	ND	NA	ND	6	2	NA	NA	NA
Jan-90	ND	NA	NA	ND	NA	ND	NA	ND	ND	2	NA	NA	NA
Jun-94	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	NA	NA	NA
Aug-94	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	1.4	14.3	<0.01
Mar-95	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	23.9	<0.01
Aug-95	<1	<1	<1	1.4	<1	ND	<1	ND	<1	<1	<5	<10	<0.1
Feb-96	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.2
Aug-96	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Feb-97	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Aug-97	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Feb-98	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Aug-98	<0.5	<0.5	<0.5	<0.5	<1	ND	<0.5	<0.5	<0.5	<0.5	<1	3.52	<0.05
Feb-99	<0.5	<0.5	<0.5	<0.5	<1	ND	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.05
Aug-99	<0.5	<0.5	<0.5	<0.5	<0.5	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.05
Nov-99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<2	<0.05
MW-4													
Jul-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Nov-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Mar-87	0.5	NA	NA	NA	NA	ND	NA	ND	1.6	1	NA	NA	NA
Sep-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA

TABLE 3

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	cis-1,2-DCE (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
Drinking Water Standard	**200**	**32**	**5**	**6**	**0.5**		**100[1]**	**NE**	**5**	**5**	**10**	**50**	**0.2[2]**
Feb-88	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Jan-89	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Jun-89	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Jan-90	ND	NA	NA	ND	NA	ND	NA	ND	1.9	ND	NA	NA	NA
Jun-94	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	NA	NA	NA
Aug-94	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<1	6.4	<0.01
Mar-95	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	2.67
Aug-95	<1	<1	<1	1.1	<1	ND	<1	ND	<1	<1	<5	<10	<0.1
Feb-96	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.2
Aug-96	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Feb-97	<1	<1	<1	<1	<1	ND	<1	ND	<1	<1	<5	<10	<0.01
Aug-97	<1	<1	<1	<1	<1	ND	<1	ND	1.2	<1	<5	<10	<0.01
Feb-98	<1	<1	<1	<1	<1	ND	<1	ND	1.33	<1	<5	<10	<0.01
Aug-98	<0.5	<0.5	<0.5	<0.5	<1	ND	<0.5	1.8	<0.5	<0.5	<1	5.89	<0.05
Feb-99	<0.5	<0.5	<0.5	<0.5	<1	ND	<0.5	1.8	0.6	<0.5	<5	38	<0.05
Aug-99	<0.5	<0.5	<0.5	<0.5	<0.5	ND	<0.5	2.2	0.6	<0.5	<0.5	<2	<0.05
Nov-99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	0.7	<0.5	<0.5	2.9	<0.05
Nov-99 Dup	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	0.7	<0.5	<0.5	2	<0.05
MW-7													
Jul-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Nov-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	N.A	NA
Mar-87	48	NA	NA	NA	NA	ND	NA	ND	81	456	NA	NA	NA
Sep-87	56	NA	NA	NA	NA	ND	NA	ND	93	200	NA	NA	NA
Feb-88	8.2	NA	NA	NA	NA	ND	NA	ND	74	152	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	ND	NA	ND	150	200	NA	NA	NA
Jun-89	50	NA	NA	42	NA	ND	NA	ND	60	66	NA	NA	NA
Jan-90	1.6	NA	NA	440	NA	ND	NA	ND	160	400	NA	NA	NA
Jun-94	<1	2.8	<1	40	<1	ND	1.8	ND	42	280	NA	NA	NA
Aug-94	<1	17	6.2	140	1.7	ND	2.4	ND	60	310	1.3	115	0.76
Mar-95	<1	4.5	<1	66	<1	ND	<1	ND	28	145	<5	49.6	0.14
Aug-95	<1	<1	<1	43	<1	ND	<1	ND	1.9	130	<5	26.5	0.025
Feb-96	<1	<1	<1	36	<1	ND	<1	ND	18	120	<5	36.3	0.37
Aug-96	<1	4.5	1.3	46	<1	ND	<1	ND	20	87	<5	38.2	0.30
Feb-97	<1	3.6	<1	41	<1	ND	<1	ND	31	170	<5	35	0.126
Feb-97 Dup	<1	4.1	1.1	47	<1	ND	<1	ND	35	180	NA	NA	NA
Aug-97	<1	<1	<1	43	<1	ND	<1	ND	18	105	<5	17.4	<0.01
Aug-97 Dup	<5	<5	<5	45	<5	ND	<5	ND	18	150	NA	NA	NA

TABLE 3

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	cis-1,2-DCE (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
Drinking Water Standard	**200**	**32**	**5**	**6**	**0.5**		**100[1]**	**NE**	**5**	**5**	**10**	**50**	**0.2[2]**
Feb-98	<1	5.89	2.54	172	1.02	ND	1.24	ND	57.3	222	<5	19.6	0.353
Aug-98	<0.5	<0.5	0.8	53	<1	ND	<0.5	ND	16	170	<1	31.2	<0.05
Aug-98 Dup	<0.5	<0.5	0.7	60	<1	ND	<0.5	<0.5	18	180	NA	NA	NA
Feb-99	<0.5	1.1	0.6	24	<1	ND	<0.5	<0.5	9	82	<5	46	<0.05
Aug-99	<0.5	1.6	1.1	78	0.8	ND	0.7	<0.5	17	150	<0.5	28	0.06
Nov-99	<0.5	2.1	1.8	130	<0.5	<0.5	0.9	<0.5	32	260	<0.5	34	<0.05
MW-8													
Jul-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Nov-86	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Mar-87	32	NA	NA	NA	NA	ND	NA	ND	110	180	NA	NA	NA
Sep-87	3	NA	NA	NA	NA	ND	NA	ND	27	47	NA	NA	NA
Feb-88	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	ND	NA	ND	80	90	NA	NA	NA
Jun-89	30	NA	NA	180	NA	ND	NA	ND	320	400	NA	NA	NA
Jan-90	ND	NA	NA	100	NA	ND	NA	ND	56	160	NA	NA	NA
Jun-94	<1	<1	<1	16	<1	ND	<1	ND	6.8	34	NA	NA	NA
Aug-94	<1	<1	9.4	<1	<1	ND	<1	ND	5.5	22	4.8	135	<0.01
Mar-95	<1	<1	<1	11.7	<1	ND	<1	ND	3.3	18.8	<5	20.4	<0.01
Aug-95	<1	<1	<1	7.9	<1	ND	<1	ND	<1	19	<5	14.4	<0.1
Feb-96	<1	<1	<1	17	<1	ND	<1	ND	11	35	<5	20.5	<0.2
Aug-96	<1	<1	1.6	16	<1	ND	<1	ND	11	39	<5	<10	<0.01
Feb-97	<1	<1	<1	8.3	<1	ND	<1	ND	12	33	<5	<10	<0.01
Aug-97	<1	<1	1.4	14	<1	ND	<1	ND	12	32	<5	<10	<0.01
Feb-98	<1	<1	2.26	31.1	<1	ND	<1	ND	23	52	<5	<10	<0.01
Aug-98	<0.5	<0.5	<0.5	2.6	<1	ND	<0.5	<0.5	2.3	8.5	4.21	5.22	<0.05
Feb-99	<0.5	<0.5	0.6	6.2	<1	ND	<0.5	0.6	4.7	15	<5	5	<0.05
Aug-99	<0.5	0.9	2.4	35	0.6	ND	0.7	<0.5	15	80	<0.5	12	<0.05
Aug-99 Dup	<0.5	1	2.6	46	0.7	ND	0.8	0.6	18	90	<0.5	18	<0.05
Nov-99	<0.5	<0.5	0.7	9.7	<0.5	<0.5	<0.5	<0.5	6.1	24	<0.5	7.5	<0.05
MW-11													
Feb-88	ND	NA	NA	NA	NA	ND	NA	ND	ND	26	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	ND	NA	ND	200	20	NA	NA	NA
Jun-89	ND	NA	NA	50	NA	ND	NA	ND	10	270	NA	NA	NA
Jan-90	ND	NA	NA	231	NA	ND	NA	ND	5.5	50	NA	NA	NA
Jun-94	<1	<1	<1	<1	<1	ND	1.8	ND	7	86	NA	NA	NA
Aug-94	<1	<1	16	<1	<1	ND	<1	ND	4.7	49	<1	13	<0.01
Mar-95	<1	<1	<1	20.3	<1	ND	<1	ND	4.1	59.6	<5	13.1	<0.01

TABLE 3

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	cis-1,2-DCE (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
Drinking Water Standard	**200**	**32**	**5**	**6**	**0.5**		**100[1]**	**NE**	**5**	**5**	**10**	**50**	**0.2[2]**
Aug-95	<1	<1	<1	12	<1	ND	<1	ND	<1	43	<5	13.3	<0.01
Feb-96	<1	<1	<1	12	<1	ND	<1	ND	3.8	40	<5	<10	<0.2
Aug-96	<1	<1	<1	12	<1	ND	<1	ND	4.8	45	<5	<10	<0.01
Feb-97	<1	<1	<1	<1	<1	ND	<1	ND	4.7	47	<5	<10	<0.01
Aug-97	<1	<1	<1	9.3	<1	ND	<1	ND	4.3	30	<5	<10	<0.01
Feb-98	<1	<1	<1	23.6	<1	ND	<1	ND	10.6	63.1	<5	<10	<0.01
Feb-98 Dup	<1	<1	<1	21.2	<1	ND	<1	ND	10	59.4	NA	NA	NA
Aug-98	<0.5	<0.5	<0.5	9.1	<1	ND	<0.5	1.4	2.7	37	<1	4.15	<0.05
Feb-99	<0.5	<0.5	<0.5	8.3	<1	ND	<0.5	<0.5	3	38	<5	<5	<0.05
Aug-99	<0.5	<0.5	<0.5	16	<0.5	ND	<0.5	<0.5	4.2	62	<0.5	3.4	<0.05
Nov-99	<0.5	<0.5	<0.5	18	<0.5	<0.5	<0.5	<0.5	5.4	71	<0.5	3.2	<0.05
MW-12													
Aug-95	<1	<1	6.7	250	7	ND	4.1	ND	13	540	<5	25.6	0.502
Feb-96	<5	<5	<5	230	<5	ND	<5	ND	60	380	<5	37.5	0.38
Feb-96 Dup	<5	<5	<5	210	<5	ND	<5	ND	57	360	NA	N.A	NA
Aug-96	<1	9.2	5.2	210	4.5	ND	2.9	ND	65	330	<5	30.4	0.37
Feb-97	<1	2.4	1.2	66	1.1	ND	1.1	ND	39	220	<5	25.7	0.051
Aug-97	<5	<5	<5	120	<5	ND	<5	ND	60	270	<5	32.9	0.11
Feb-98	<1	8.91	4.97	227	5.04	ND	3.4	ND	60.7	489	<5	59.2	0.111
Aug-98	<0.5	2.4	1.5	110	1.8	ND	0.6	<0.5	21	190	<1	30.7	0.16
Feb-99	<0.5	6.4	3.9	300	2.7	ND	2.2	<0.5	47	520	<5	23**	0.19
Feb-99 Dup	<0.5	6.8	3.6	260	2.8	ND	2.1	<0.5	48	460	<5	NA	0.07
Aug-99	<0.5	4.9	3.2	170	2.7	ND	1.9	<0.5	30	280	<0.5	25	<0.05
Nov-99	<0.5	3.2	2.4	170	2	<0.5	1.7	<0.5	30	220	<0.5	10	0.09

Drinking water standards are Maximum Contaminant Levels as established by the California Department of Health Services.

1 - Drinking water standard is for total trihalomethanes.

2 - Drinking water standard is the Maximum Contaminant Level as established by the U.S. Environmental Protection Agency.

NA - Not Analyzed

ND - Not Detected

NE - Not Established

< - Not detected at the detection limit shown.

* - Well sampled on September 29, 1998, as well required repair before sampling could occur.

** - Well resampled for dissolved chromium on May 7, 1999.

1,1,1-TCA - 1,1,1-Trichloroethane
1,1,2-TCA - 1,1,2-Trichloroethane
1,1-DCA - 1,1-Dichloroethane
1,1-DCE - 1,1-Dichloroethene
1,2-DCA - 1,2-Dichloroethane
cis-1,2-DCE - cis-1,2-Dichloroethene
CFM - Chloroform
DFM - Dichlordifluoromethane
PCE - Tetrachloroethene
TCE - Trichloroethene

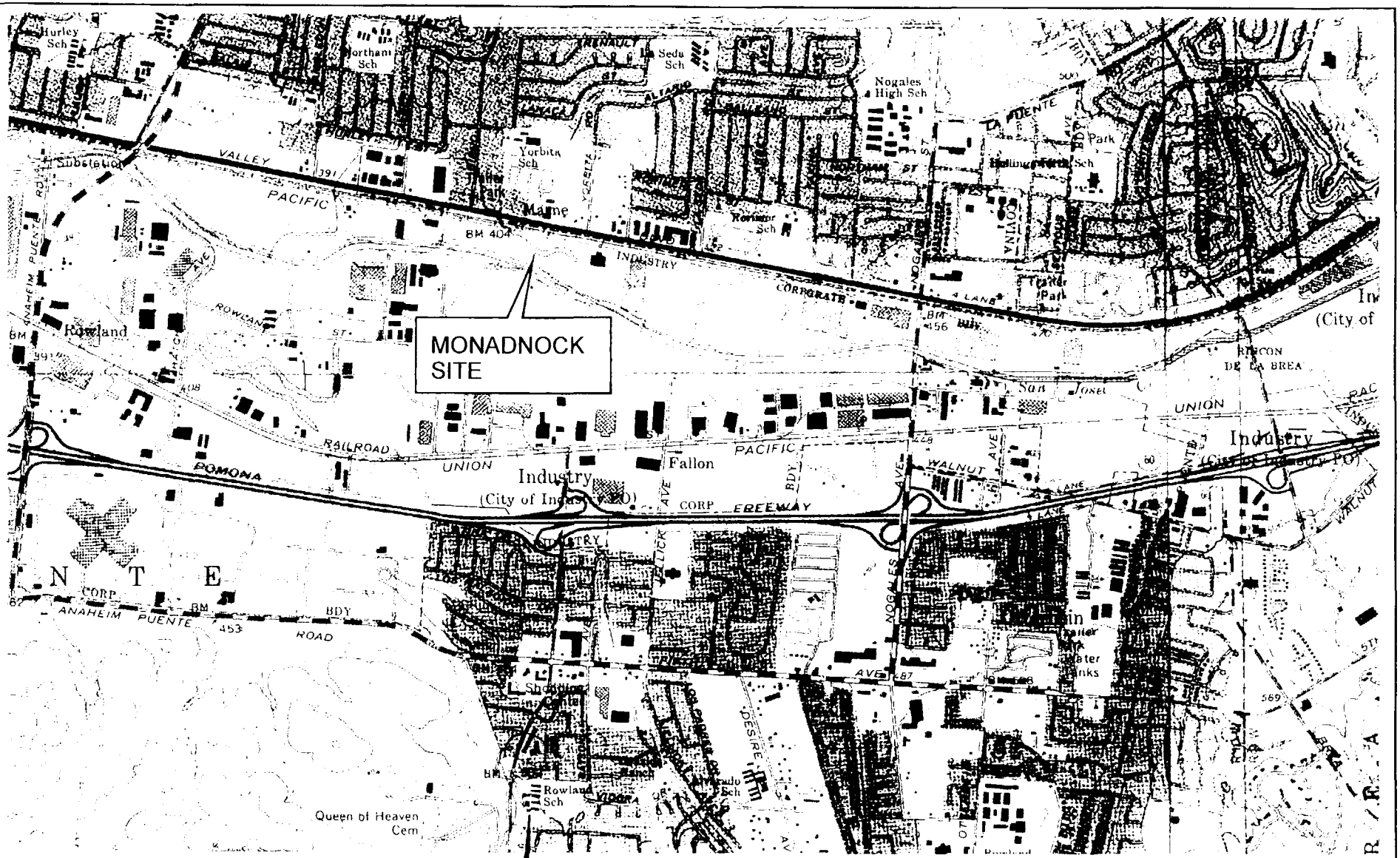
TABLE 4

ANALYTICAL RESULTS FOR 1,4-DIOXANE, NDMA AND PERCHLORATE

Well Number	1-4 Dioxane (µg/l)	NDMA (µg/l)	Total Perchlorate (µg/l)
CDHS Action Levels	3	0.02	18
MW-1	NS	NS	NS
MW-2	46.1	<0.002	<4
MW-3	3.6	<0.002	<4
MW-4	4.7	<0.002	<4
MW-7	23	<0.002	<4
MW-8	20.8	<0.002	4.5
MW-11	2.9	<0.002	<4
MW-12	31.5	<0.002	<4

NS - Not Sampled
CDHS - California Department of Health Services

FIGURES



REFERENCE: USGS 7.5-MINUTE QUADRANGLE BALDWIN PARK, CALIFORNIA DATED 1964, PHOTO REVISED 1981.

REVISION	NO	BY	DATE	DESCRIPTION
0	0	LH	5-22-96	CLIENT REVIEW

TRW INC.

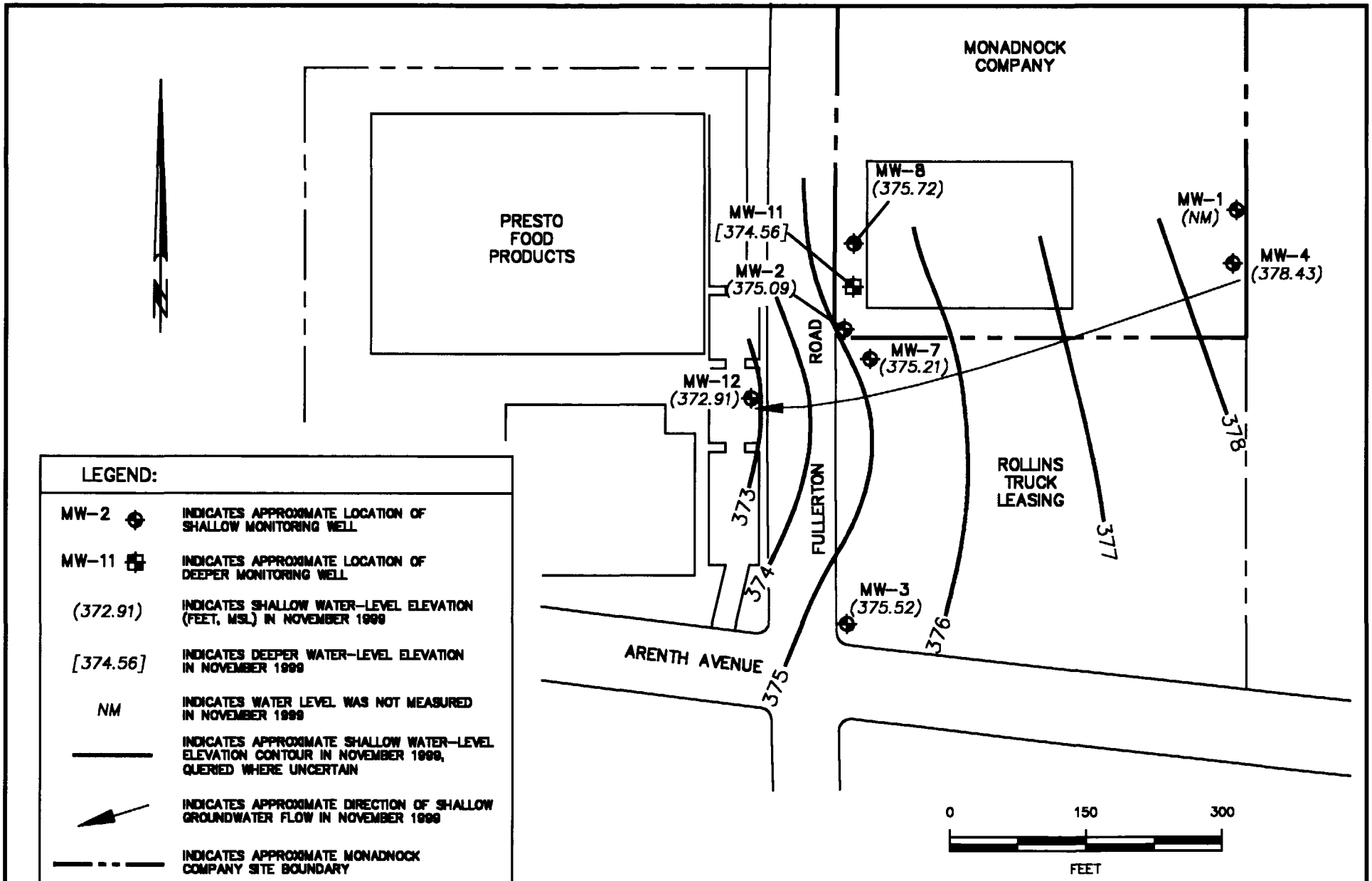
THE MONADNOCK COMPANY

SITE LOCATION MAP

PROJECT NO.	DRAWN BY	CHECKED BY
	S/1640	MT

ART NO. 9602149

FIGURE 1



TRW INC.
1900 Richmond Road
Cleveland, Ohio 44124

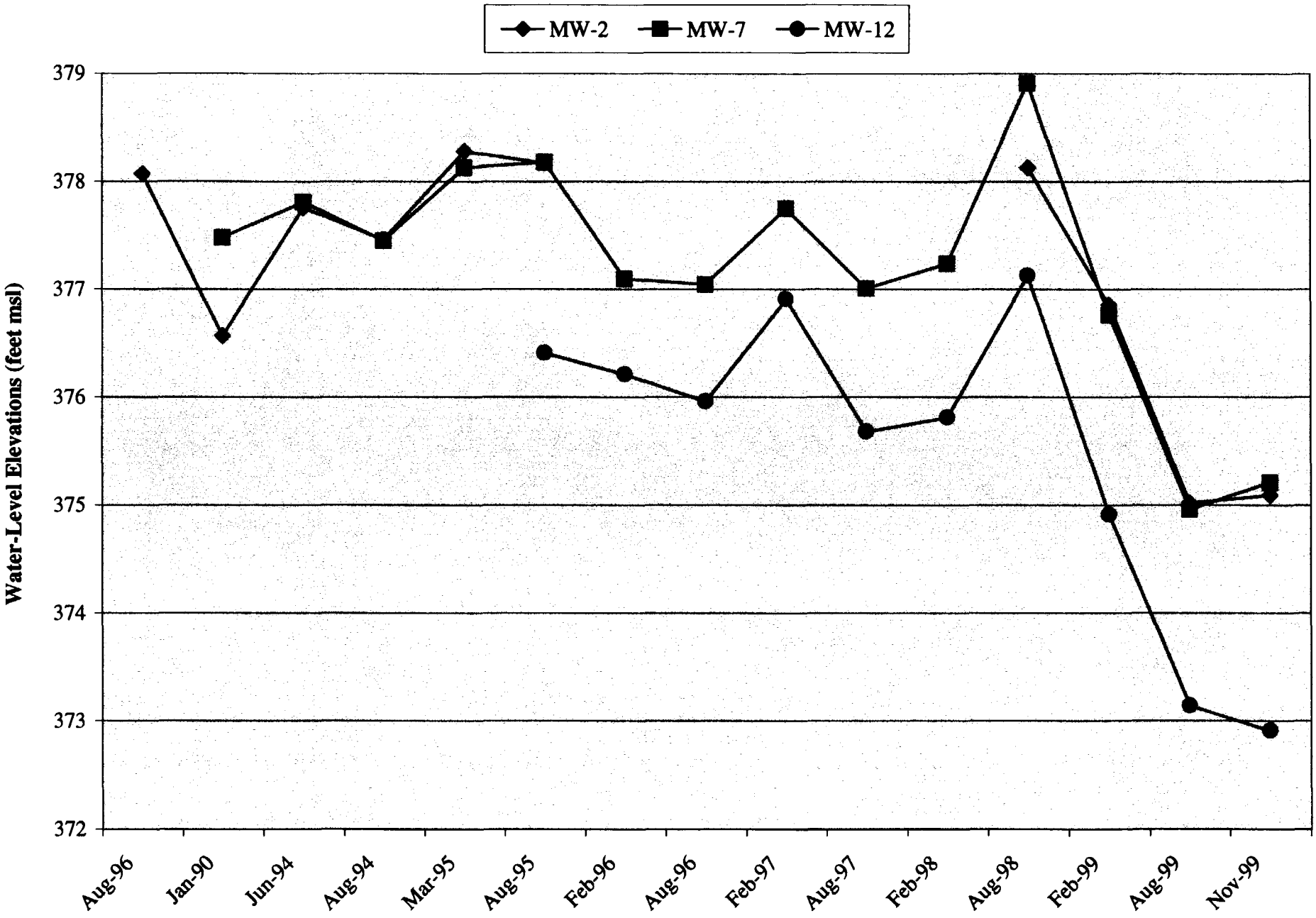
DESIGNED	LAN
DRAWN	H+A
REVIEWED	LAN
CHECKED	MT
SCALE	1"=150 FEET
DATE	12-07-99

THE MONADNOCK COMPANY

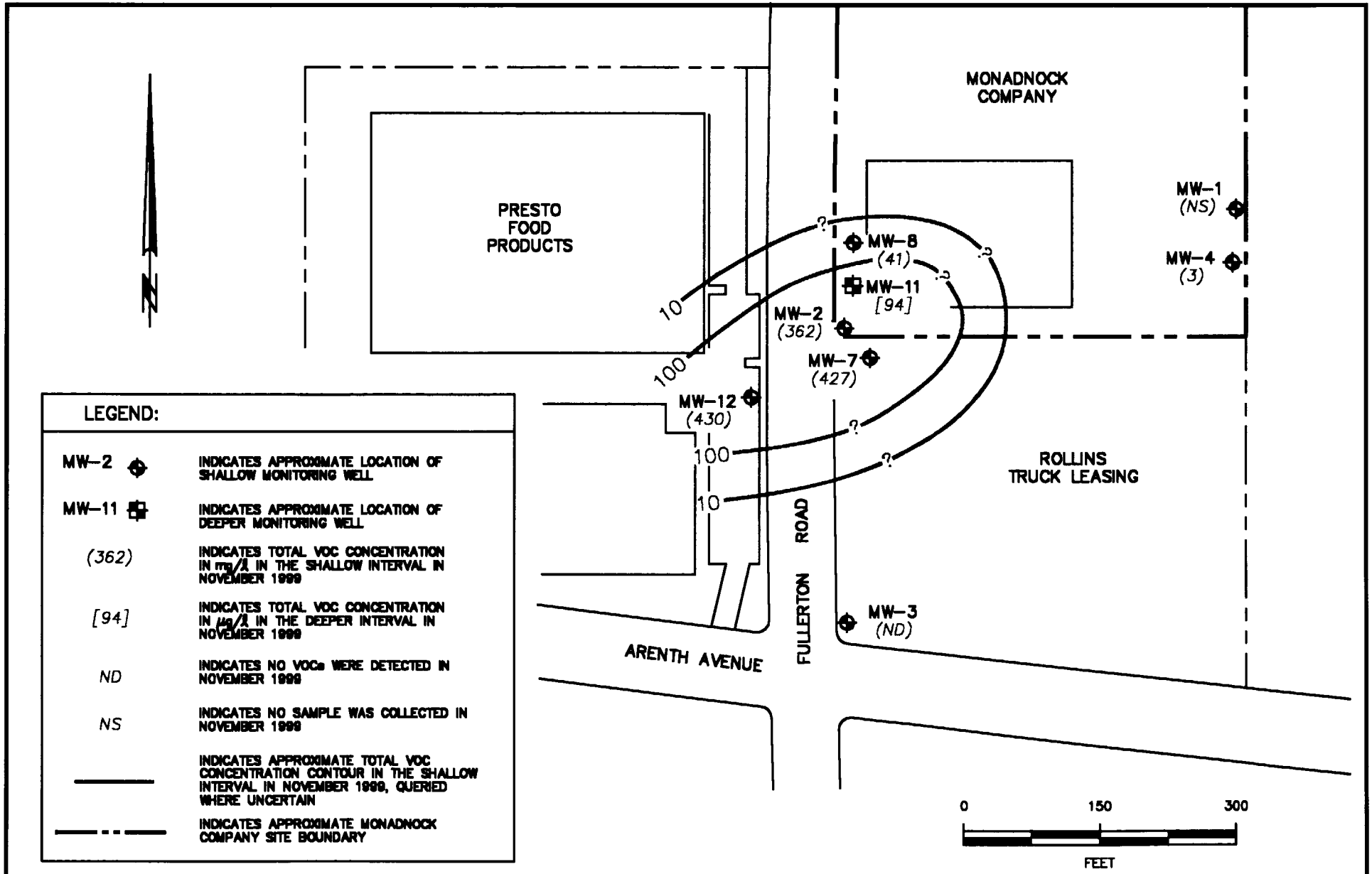
POTENTIOMETRIC SURFACE MAP NOVEMBER 1999

REVISION 0
PROJECT MON.11.99.011
FIGURE 2

MONNOV99WL.dwg



TRW	Monadnock Company Site, City of Industry, CA	Project: MON.11.99.011
	Water-Level Elevation vs. Time - Wells MW-2, MW-7 and MW-12	**FIGURE 3**



LEGEND:

MW–2 ⊕	INDICATES APPROXIMATE LOCATION OF SHALLOW MONITORING WELL
MW–11 ⊕	INDICATES APPROXIMATE LOCATION OF DEEPER MONITORING WELL
(362)	INDICATES TOTAL VOC CONCENTRATION IN mg/l IN THE SHALLOW INTERVAL IN NOVEMBER 1999
[94]	INDICATES TOTAL VOC CONCENTRATION IN µg/l IN THE DEEPER INTERVAL IN NOVEMBER 1999
ND	INDICATES NO VOCs WERE DETECTED IN NOVEMBER 1999
NS	INDICATES NO SAMPLE WAS COLLECTED IN NOVEMBER 1999
———	INDICATES APPROXIMATE TOTAL VOC CONCENTRATION CONTOUR IN THE SHALLOW INTERVAL IN NOVEMBER 1999, QUERIED WHERE UNCERTAIN
——— · ———	INDICATES APPROXIMATE MONADNOCK COMPANY SITE BOUNDARY

TRW INC.
1900 Richmond Road
Cleveland, Ohio 44124

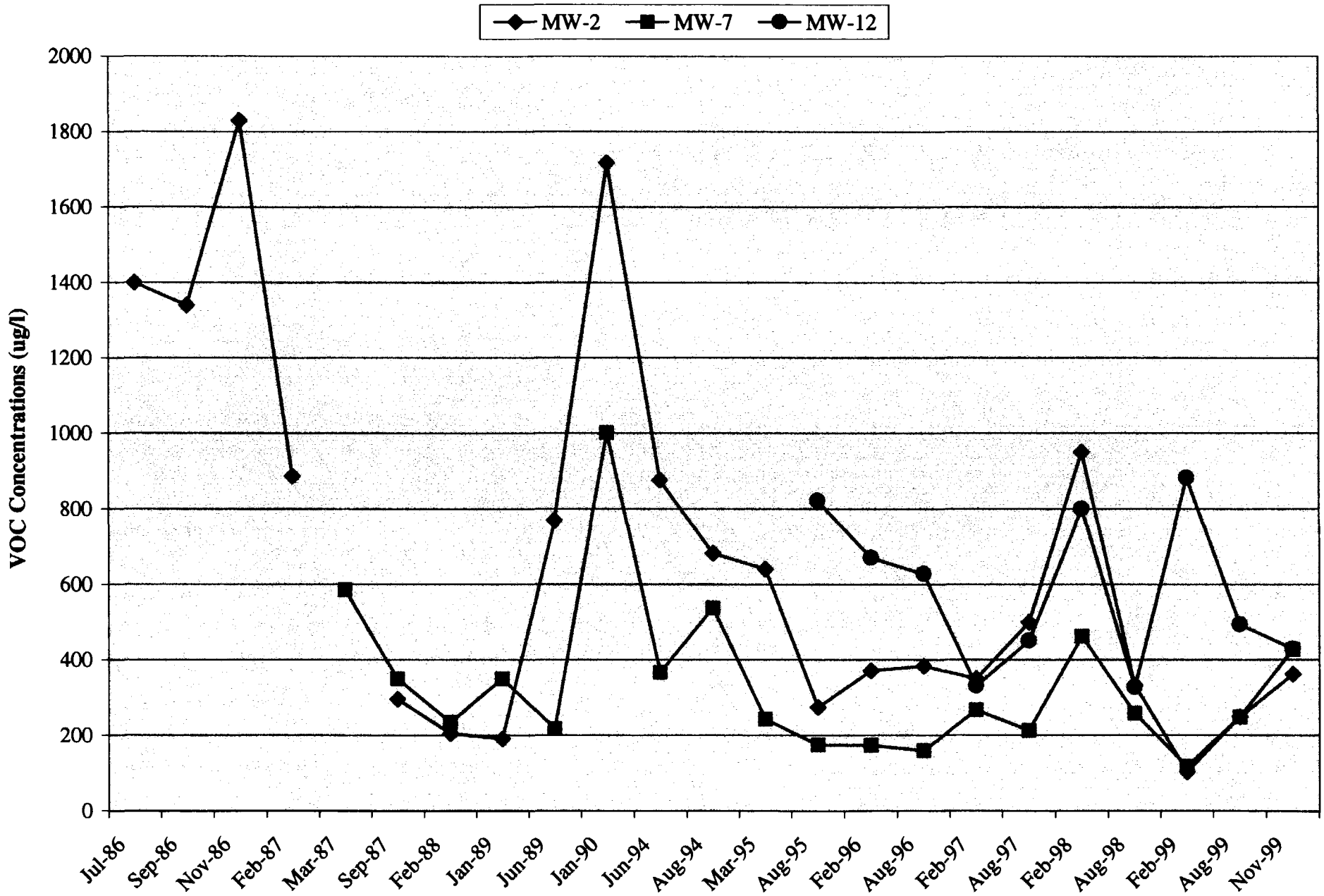
DESIGNED	LAN
DRAWN	SCS
REVIEWED	LAN
CHECKED	MT
SCALE	1"=150 FEET
DATE	12–07–99

THE MONADNOCK COMPANY

TOTAL VOC CONCENTRATION CONTOUR MAP NOVEMBER 1999

REVISION 0
PROJECT MON.11.99.011
FIGURE 4

MONNOV99VOC.dwg



TRW	Monadnock Company Site, City of Industry, CA	Project: MON.11.99.011
	Total VOC Concentrations vs. Time - Wells MW-2, MW-7 and MW-12	**FIGURE 5**

APPENDIX A

STANDARD FIELD PROCEDURES
AND WATER PURGING LOGS

TRW's WELL MONITORING AND SAMPLING FIELD PROCEDURES

Prior to purging the wells, static groundwater levels and total well depths are measured in all wells. A clean electronic sounder is used to measure the depth to water below the top of each well casing to the nearest 0.01 foot. Where previous data indicate the presence or likely presence, an interface probe is used to monitor the presence and thickness of light or dense non-aqueous phase liquid (LNAPL/DNAPL).

Each monitoring well is purged a minimum of three well casing volumes prior to sampling. Well purging is accomplished using either dedicated polyethylene bailers, 1.75" or 3.5" diameter PVC bailers, 1.5" disposable HDPE bailers, dedicated bladder pumps, or 2" Grundfos pumps, depending on the characteristics of each well and/or the site. Measurements of pH, specific conductivity, and temperature are recorded at periodic intervals during the purging of all wells. Water-level measurement, well purging, and well sampling data are recorded for each well on water purging logs. Copies of the logs follow these procedures.

Groundwater samples are carefully collected from each well after the water level has recovered to at least 80 percent of the static level. Groundwater samples are collected from the monitoring wells and piezometers using specific well-dedicated Teflon, PVC or polyethylene bailers, or 1.5" disposable HDPE bailers. The dedicated bailers (where used) are suspended in the well from new nylon rope or a monofilament line. Groundwater samples are collected from the sample ports for extraction wells and eductor pipes. Groundwater extraction wells are typically sampled from a dedicated sampling port on the discharge line.

The samples are slowly transferred to new sample containers supplied by the analytical laboratory for each specific analysis. Volatile organic analysis vials are filled in a manner such that no headspace exists. Each sample is logged on a chain-of-custody form that accompanies the samples. The samples are then stored in a clean portable ice chest and cooled with ice until delivery to the analytical laboratory.

Monitoring equipment is decontaminated between use in each well using a non-phosphate detergent wash followed by two deionized water rinses. Wastewater, generated from decontamination activities, is collected in 55-gallon drums. The drummed wastewater is then stored onsite for later disposal or treatment.

Field quality assurance/quality control (QA/QC) procedures are employed during each monitoring event to document that the sampling results meet accepted QA/QC standards. The QA/QC samples collected in the field include blind duplicates, trip blanks, and equipment blanks. Additional QA/QC procedures employed in the field include sequencing the sampling in such a manner that the wells with the lowest levels of contamination are sampled prior to those with the highest levels.

GROUNDWATER MONITORING
WATER PURGING LOG

Project Name: Monadnock Date: 11/1/99
Well No.: MW-1 Location: Collected by:

Well Purging Method: SEE NOTE SECTION BELOW
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes No
Total Depth (ft.): H_2O Level (ft.): Height of Water Column (ft.):
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x _____ gal./ft. x _____ ft. = _____ gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes

* Total Purged (gallons): No. of Casing Volumes:
* Well Sampling Method:
* Decontamination Method:

Calibration record, Observations, and Notes

* Ph Meter Calibration: Zeroed to: Spanned to:
* Ambient Temp. ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind
* Decon. Water changed out after this well: Yes No

* Notes: WELL MW-1 was damaged by a local construction Company and to date has not been cleaned of debri that fell into the well.

GROUNDWATER MONITORING
WATER PURGING LOG

Project Name: Mandrick Date: 11/1/99
Well No.: MW-2 Location: Collected by: F. Rodriguez

Well Purging Method: PVC Bailer
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ✓ No
Total Depth (ft.): 44.85 H_2O Level (ft.): 32.92 Height of Water Column (ft.): 11.93
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 0.65 gal./ft. x 11.93 ft. = 23.24 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1245	8	75.0	1600	7.18	Water - very cloudy
1249	16 12	75.2	1584	7.03	Well purged dry @ 12 gallons
	24				

* Total Purged (gallons): 12 No. of Casing Volumes: 1.5
* Well Sampling Method: Disposable & Teflon Bailers
* Decontamination Method: 1 wash / 3 rinse

Calibration record, Observations, and Notes

* Ph Meter Calibration: Zeroed to: 7 Spanned to: 10
* Ambient Temp. 75 ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind
* Decon. Water changed out after this well: Yes No ✓

* Notes:

GROUNDWATER MONITORING
WATER PURGING LOG

Project Name: Monadnock Date: 11/1/99
Well No.: MW-3 Location: Collected by: FRANK RODRIGUEZ (STRONG ARM)

Well Purging Method: PVC BAILER
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ✓ No ___
Total Depth (ft.): 48.00 H_2O Level (ft.): 33.00 Height of Water Column (ft.): 15.00
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 0.65 gal./ft. x 15.00 ft. = 29.25 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
0822	10	70.4	1733	7.14	water - cloudy
0832	26 18	67.8	1620	6.70	well purged dry @ 18 gallon
	30				

* Total Purged (gallons): 18 No. of Casing Volumes: 1+
* Well Sampling Method: disposable bailer & TEFLON Bailer
* Decontamination Method: 1 wash & 3 rinse

Calibration record, Observations, and Notes

* Ph Meter Calibration: Zeroed to: 7 Spanned to: 10
* Ambient Temp. 75 °(Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind
* Decon. Water changed out after this well: Yes No ✓

* Notes:

GROUNDWATER MONITORING
WATER PURGING LOG

Project Name: Monadnock Date: 11/1/99
Well No.: MW-4 Location: Collected by: F. Rodriguez

Well Purging Method: PVC Bailer
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ✓ No ___
Total Depth (ft.): 51.05 H_2O Level (ft.): 34.52 Height of Water Column (ft.): 15.53
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 0.65 gal./ft. x 15.53 ft. = 30.28 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
0910	11	71.5	1627	7.30	Water - cloudy
0919	22	72.8	1603	6.84	" - "
0933	33	72.8	1597	6.91	" - "

* Total Purged (gallons): 33 No. of Casing Volumes: 3
* Well Sampling Method: Disposable and Teflon bailers
* Decontamination Method: 1 wash / 3 rinse

Calibration record, Observations, and Notes

* Ph Meter Calibration: Zeroed to: 7 Spanned to: 10
* Ambient Temp. 75 ° (Clear) Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind
* Decon. Water changed out after this well: Yes No ✓

* Notes:

GROUNDWATER MONITORING
WATER PURGING LOG

Project Name: Monadnock Date: 11/1/99
Well No.: MW-7 Location: _____ Collected by: F. Rodriguez

Well Purging Method: PVC Bailer
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ✓ No ____
Total Depth (ft.): 56.50 H_2O Level (ft.): 33.95 Height of Water Column (ft.): 22.55
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 0.65 gal./ft. x 22.55 ft. = 43.97 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1324	15	76.9	1546	6.92	Water - cloudy
1332	30	75.5	1482	6.98	" - "
1345	45	74.3	1446	7.06	" - "

* Total Purged (gallons): 45 No. of Casing Volumes: 3
* Well Sampling Method: Disposable & Teflon Bailers
* Decontamination Method: Wash / 3 rinse

Calibration record, Observations, and Notes

* Ph Meter Calibration: Zeroed to: 7 Spanned to: 10
* Ambient Temp. 75 °(Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind _____
* Decon. Water changed out after this well: Yes ✓ No _____

* Notes: _____

GROUNDWATER MONITORING
WATER PURGING LOG

Project Name: Monadnock Date: 11/1/99
Well No.: MW-8 Location: Collected by: E. Rodriguez

Well Purging Method: PVC Bailer
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ✓ No
Total Depth (ft.): 52.65 H_2O Level (ft.): 33.28 Height of Water Column (ft.): 19.37
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 0.65 gal./ft. x 19.37 ft. = 37.77 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1015	13	73.3	1603	6.87	Water - cloudy
1024	26	73.1	1603	7.16	" - "
1031	39	72.8	1601	6.99	" - "

* Total Purged (gallons): 39 No. of Casing Volumes: 3
* Well Sampling Method: Disposable and Teflon bailers
* Decontamination Method: 1 wash / 3 rinse

Calibration record, Observations, and Notes

* Ph Meter Calibration: Zeroed to: 7 Spanned to: 10
* Ambient Temp. 75 ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind
* Decon. Water changed out after this well: Yes No ✓

* Notes:

GROUNDWATER MONITORING
WATER PURGING LOG

Project Name: Monadnock Date: 11/1/99
Well No.: MW-11 Location: Collected by: F. Rodriguez

Well Purging Method: PVC Bailer
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ✓ No
Total Depth (ft.): 98.70 H_2O Level (ft.): 34.37 Height of Water Column (ft.): 64.33
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 0.65 gal./ft. x 64.33 ft. = 125.44 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1118	42	80.3	1406	7.18	Water - slightly cloudy
1136	84	74.0	1319	7.27	water - cloudy
1150	126	73.9	1316	7.40	" - "

* Total Purged (gallons): 126 No. of Casing Volumes: 3
* Well Sampling Method: Disposable & Teflon Bailer
* Decontamination Method: 1 wash / 3 rinse

Calibration record, Observations, and Notes

* Ph Meter Calibration: Zeroed to: 7 Spanned to: 10
* Ambient Temp. 75 ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind
* Decon. Water changed out after this well: Yes No ✓

* Notes:

GROUNDWATER MONITORING
WATER PURGING LOG

Project Name: Monadnock Date: 11/2/99
Well No.: MW-12 Location: Collected by: E. Rodriguez

Well Purging Method: PVC Bailer
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ✓ No
Total Depth (ft.): 49.40 H_2O Level (ft.): 34.00 Height of Water Column (ft.): 15.40
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 0.65 gal./ft. x 15.40 ft. = 30.03 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
0802	11	65.5	1380	7.61	Water - slightly cloudy
0810	22	64.4	1341	7.52	" " "
0816	3/27	64.8	1542	7.28	well purged dry @ 27 gallons

* Total Purged (gallons): 27 No. of Casing Volumes: 3+
* Well Sampling Method: Disposable & Teflon Bailers
* Decontamination Method: 1 wash / 3 rinse

Calibration record, Observations, and Notes

* Ph Meter Calibration: Zeroed to: 7 Spanned to: 10
* Ambient Temp. 65 ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind
* Decon. Water changed out after this well: Yes ✓ No

* Notes:

GROUNDWATER MONITORING
ANALYTICAL QC LOG

Project: Manadnock Date: 11/2/99 Collected By: Chris Colley FRANK Rodriguez

Sample Number	Well Number	Time	QC Sample
M01102 99-1	MW-4	0845	
M01102 99-1-B			
M01102 99-1-C			
M01102 99-1-D			
M01102 99-1-E			
M01102 99-1-F			
M01102 99-2	MW-4	0855	DUPLICATE
M01102 99-2-B			
M01102 99-2-C			
M01102 99-2-D			
M01102 99-2-E			
M01102 99-2-F			
M01102 99-3	MW-3	1015	
M01102 99-3-B			
M01102 99-3-C			
M01102 99-3-D			
M01102 99-3-E			
M01102 99-3-F			
M01102 99-3-G			MS/MSD
M01102 99-4	MW-12	1050	
M01102 99-4-B			
M01102 99-4-C			
M01102 99-4-D			
M01102 99-4-E			
M01102 99-4-F			

Decon Water changed out after well number: _____

Observations/Notes: _____

_____

GROUNDWATER MONITORING
ANALYTICAL QC LOG

Project: Monadnock Date: 11/2/99 Collected By: Coatey & Rodriguez

Sample Number	Well Number	Time	QC Sample
M0110299-4-G	MW-12	1050	EQUIPMENT BLANK
M0110299-5	MW-8	1215	
M0110299-5-B			
M0110299-5-C			
M0110299-5-D			
M0110299-5-E			
M0110299-5-F			
M0110299-6	MW-11	1245	
M0110299-6-B			
M0110299-6-C			
M0110299-6-D			
M0110299-6-E			
M0110299-6-F			
M0110299-7	MW-2	1315	
M0110299-7-B			
M0110299-7-C			
M0110299-7-D			
M0110299-7-E			
M0110299-7-F			
M0110299-7-G			EQUIPMENT BLANK
M0110299-8	MW-7	1345	
M0110299-8-B			
M0110299-8-C			
M0110299-8-D			
M0110299-8-E			

Decon Water changed out after well number: ______________________

Observations/Notes: ______________________

GROUNDWATER MONITORING
ANALYTICAL QC LOG

Project: Monadnock Date: 11/2/99 Collected By: Colby & Rodriguez

Sample Number	Well Number	Time	QC Sample
M0110299-8-F	MW-7	1345	
M0110299-8-G	———	———	TRIP BLANK

Decon Water changed out after well number: _____

Observations/Notes: _____

_____

APPENDIX B

ANALYTICAL LABORATORY REPORTS
AND CHAIN-OF-CUSTODY FORMS

RCL 12/1/99

Centrum Analytical Laboratories, Inc.

CERTIFIED HAZARDOUS WASTE TESTING LABORATORY • CHEMICAL AND BIOLOGICAL ANALYSES

Client: Orion Environmental
3450 E. Spring Ste. 212
Long Beach, CA 90806

Date Sampled: 11/02/99
Date Received: 11/02/99
Job Number: 15591

Project: Monadnock

CASE NARRATIVE

The following information applies to samples which were received on 11/02/99 :

The samples were received at the laboratory chilled and sample containers were intact.

The Cyanide analysis was subcontracted to ELAP Lab #1230. The original report is attached to, but is not part of, this report.

The 1,4-Dioxane analysis was subcontracted to ELAP Lab #1237. The original report is attached but is not part of, this report.

The NDMA and Total Perchlorate analyses were subcontracted to ELAP Lab #1422. The original report from that laboratory will be sent separately.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested.

Report approved by:

Robert R. Clark, Ph.D.
Laboratory Director

ELAP # 1184

DL : Detection Limit -- The lowest level at which the compound can reliably be detected under normal laboratory conditions.
ND : Not Detected -- The compound was analyzed for but was not found to be present at or above the detection limit.
NA : Not Analyzed -- Per client request, this analyte was not on the list of compounds to be analyzed for.

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Total Dissolved Cadmium By GFAA

Client:	Orion Environmental	Date Sampled:	11/02/99
Project:	Monadnock	Date Received:	11/02/99
Job No.:	15591	Date Digested:	11/03/99
Matrix:	Water	Date Analyzed:	11/04/99
Analyst:	RLB	Batch Number:	6010W1373
		Method Number:	6010

	Detection Limit	Cadmium
Sample ID	ug/L	ug/L
Method Blank	0.5	ND
MW-4 M0110299-1	0.5	ND
MW4D M0110299-2	0.5	ND
MW-3 M0110299-3	0.5	0.7
MW-12 M0110299-4	0.5	ND
MW-5 M0110299-5	0.5	ND
MW-11 M0110299-6	0.5	ND
MW-2 M0110299-7	0.5	0.7
MW-7 M0110299-8	0.5	ND

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QC Sample Report - Metals

Matrix: Water
Batch #: 6010W1373

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Compound	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Cadmium	1.0	**89.5**	75 - 125	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: #1

Compound	Spike Sample Recovery mg/L	Spike Duplicate Recovery mg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
Cadmium	0.900	0.917	**2%**	20%	**Pass**

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

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Total Dissolved Chromium By GFAA

Client:	Orion Environmental	Date Sampled:	11/02/99
Project:	Monadnock	Date Received:	11/02/99
Job No.:	15591	Date Digested:	11/03/99
Matrix:	Water	Date Analyzed:	11/04/99
Analyst:	RLB	Batch Number:	6010W1373
		Method Number:	6010

		Detection Limit	Chromium
	Sample ID	ug/L	ug/L
	Method Blank	2.0	ND
mw-4	**M0110299-1**	2.0	**2.9**
mw-4D	**M0110299-2**	2.0	**2.0**
mw-3	**M0110299-3**	2.0	ND
mw-2	**M0110299-4**	2.0	**10**
mw-8	**M0110299-5**	2.0	**7.5**
mw-11	**M0110299-6**	2.0	**3.2**
mw-2	**M0110299-7**	20	**49**
mw-7	**M0110299-8**	20	**34**

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QC Sample Report - Metals

Matrix: Water
Batch #: 6010W1373

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Compound	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Chromium	1.0	**102.9**	75 - 125	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: #1

Compound	Spike Sample Recovery mg/L	Spike Duplicate Recovery mg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
Chromium	0.988	0.949	**4%**	20%	**Pass**

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

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EPA 8260 - Volatile Organics

Client: Orion Environmental
Project: Monadnock
Job No.: 15591
Matrix: Water
Analyst: GR

Date Sampled: 11/02/99
Date Received: 11/02/99
Date Analyzed: 11/03-10/99
Batch Number: 8260W1893
8260W1898
8260W1901

	Sample ID:	Blank	MW-4 m0110299-1	MW-4D m0110299-2	MW-3 m0110299-3	MS/MSD m0110299-3-G	MW-12 m0110299-4
Compounds	**DL**	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Acetone	50	ND	ND	ND	ND	ND	ND
Benzene	0.5	ND	ND	ND	ND	ND	ND
Bromobenzene	1.0	ND	ND	ND	ND	ND	ND
Bromochloromethane	1.0	ND	ND	ND	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND	ND	ND	ND
Bromoform	0.5	ND	ND	ND	ND	ND	ND
Bromomethane	0.5	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND	ND	ND	ND
n-Butylbenzene	0.5	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	0.5	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	0.5	ND	ND	ND	ND	ND	ND
Carbon disulfide	10	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	0.5	ND	ND	ND	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND	ND	ND	ND
Chloroethane	0.5	ND	ND	ND	ND	ND	ND
Chloroform	0.5	ND	ND	ND	ND	ND	**1.7**
Chloromethane	0.5	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	0.5	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	0.5	ND	ND	ND	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.5	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	10	ND	ND	ND	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	0.5	ND	**1.4**	**1.9**	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND	ND	ND	**2.4**
1,2-Dichloroethane	0.5	ND	ND	ND	ND	ND	**2.0**
1,1-Dichloroethene	0.5	ND	ND	ND	ND	ND	**170**
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND

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EPA 8260 - Volatile Organics

Client: Orion Environmental
Project: Monadnock
Job No.: 15591
Matrix: Water
Analyst: GR

Date Sampled: 11/02/99
Date Received: 11/02/99
Date Analyzed: 11/03-10/99
Batch Number: 8260W1893
8260W1898
8260W1901

	Sample ID:	Blank	m0110299-1 (MW-4)	m0110299-2 (MW-4D)	m0110299-3 (MW-3)	m0110299-3-G (MS/MSD)	m0110299-4 (MW-12)
Compounds	**DL**	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Ethylbenzene	0.5	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND	ND	ND	ND
2-Hexanone	10	ND	ND	ND	ND	ND	ND
Isopropylbenzene	0.5	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	0.5	ND	ND	ND	ND	ND	ND
Methylene chloride	10	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	5.0	ND	ND	ND	ND	ND	ND
Methyl-tert-butyl ether (MtBE)	1.0	ND	ND	ND	ND	ND	ND
Napthalene	1.0	ND	ND	ND	ND	ND	ND
n-Propylbenzene	0.5	ND	ND	ND	ND	ND	ND
Styrene	0.5	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND	ND	ND	ND
Tetrachloroethene	0.5	ND	**0.7**	**0.7**	ND	ND	**30**
Toluene	0.5	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND	ND	ND	**3.2**
Trichloroethene	0.5	ND	ND	ND	ND	ND	**220**
1,2,3-Trichloropropane	0.5	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND	ND	ND	ND
Trichlorotrifluoroethane	5.0	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	0.5	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	0.5	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND	ND	ND	ND
Xylenes (total)	1.5	ND	ND	ND	ND	ND	ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID:	Blank	m0110299-1	m0110299-2	m0110299-3	m0110299-3-G	m0110299-4
Dibromofluoromethane	107	106	104	105	107	105
Toluene-d8	103	103	102	104	104	102
Bromofluorobenzene	105	104	104	105	105	105

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EPA 8260 - Volatile Organics

Client: Orion Environmental
Project: Monadnock
Job No.: 15591
Matrix: Water
Analyst: GR

Date Sampled: 11/02/99
Date Received: 11/02/99
Date Analyzed: 11/03-10/99
Batch Number: 8260W1893
8260W1898
8260W1901

		EB	MW-5	MW-11	MW-2	EB	MW-7
	Sample ID:	**m0110299-4-G**	**m0110299-5**	**m0110299-6**	**m0110299-7**	**m0110299-7-G**	**m0110299-8**
Compounds	**DL**	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Acetone	50	ND	ND	ND	ND	ND	ND
Benzene	0.5	ND	ND	ND	ND	ND	ND
Bromobenzene	1.0	ND	ND	ND	ND	ND	ND
Bromochloromethane	1.0	ND	ND	ND	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND	ND	ND	ND
Bromoform	0.5	ND	ND	ND	ND	ND	ND
Bromomethane	0.5	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND	ND	ND	ND
n-Butylbenzene	0.5	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	0.5	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	0.5	ND	ND	ND	ND	ND	ND
Carbon disulfide	10	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	0.5	ND	ND	ND	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND	ND	ND	ND
Chloroethane	0.5	ND	ND	ND	ND	ND	ND
Chloroform	0.5	**0.5**	ND	ND	**1.4**	ND	**0.9**
Chloromethane	0.5	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	0.5	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	0.5	ND	ND	ND	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.5	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	10	ND	ND	ND	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	0.5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	0.5	ND	**0.7**	ND	**3.6**	ND	**1.8**
1,2-Dichloroethane	0.5	ND	ND	ND	**1.2**	ND	ND
1,1-Dichloroethene	0.5	ND	**9.7**	**18**	**110**	ND	**130**
cis-1,2-Dichloroethene	0.5	ND	ND	ND	**0.6**	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND

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EPA 8260 - Volatile Organics

Client:	Orion Environmental	Date Sampled:	11/02/99
Project:	Monadnock	Date Received:	11/02/99
Job No.:	15591	Date Analyzed:	11/03-10/99
Matrix:	Water	Batch Number:	8260W1893
Analyst:	GR		8260W1898
			8260W1901

		EB	MW-8	MW-11	MW-2	EB	MW-7
	Sample ID:	**m0110299-4-G**	**m0110299-5**	**m0110299-6**	**m0110299-7**	**m0110299-7-G**	**m0110299-8**
Compounds	**DL**	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Ethylbenzene	0.5	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND	ND	ND	ND
2-Hexanone	10	ND	ND	ND	ND	ND	ND
Isopropylbenzene	0.5	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	0.5	ND	ND	ND	ND	ND	ND
Methylene chloride	10	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	5.0	ND	ND	ND	ND	ND	ND
Methyl-tert-butyl ether (MtBE)	1.0	ND	ND	ND	ND	ND	ND
Napthalene	1.0	ND	ND	ND	ND	ND	ND
n-Propylbenzene	0.5	ND	ND	ND	ND	ND	ND
Styrene	0.5	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND	ND	ND	ND
Tetrachloroethene	0.5	ND	**6.1**	**5.4**	**49**	ND	**32**
Toluene	0.5	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND	**5.7**	ND	**2.1**
Trichloroethene	0.5	ND	**24**	**71**	**190**	ND	**260**
1,2,3-Trichloropropane	0.5	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND	ND	ND	ND
Trichlorotrifluoroethane	5.0	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	0.5	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	0.5	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND	ND	ND	ND
Xylenes (total)	1.5	ND	ND	ND	ND	ND	ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID:	**m0110299-4-G**	**m0110299-5**	**m0110299-6**	**m0110299-7**	**m0110299-7-G**	**m0110299-8**
Dibromofluoromethane	109	105	107	105	105	105
Toluene-d8	104	103	103	103	103	103
Bromofluorobenzene	105	104	104	104	105	104

EPA 8260 - Volatile Organics

Client:	Orion Environmental	Date Sampled:	11/02/99
Project:	Monadnock	Date Received:	11/02/99
Job No.:	15591	Date Analyzed:	11/03-10/99
Matrix:	Water	Batch Number:	8260W1893
Analyst:	GR		8260W1898
			8260W1901

TB

Sample ID:	m0110299-8-G	
Compounds	**DL**	µg/L
Acetone	50	ND
Benzene	0.5	ND
Bromobenzene	1.0	ND
Bromochloromethane	1.0	ND
Bromodichloromethane	0.5	ND
Bromoform	0.5	ND
Bromomethane	0.5	ND
2-Butanone (MEK)	10	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Carbon disulfide	10	ND
Carbon tetrachloride	0.5	ND
Chlorobenzene	0.5	ND
Chloroethane	0.5	ND
Chloroform	0.5	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
Dibromochloromethane	0.5	ND
1,2-Dibromoethane	0.5	ND
1,2-Dibromo-3-chloropropane	10	ND
Dibromomethane	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,2-Dichloroethane	0.5	ND
1,1-Dichloroethene	0.5	ND
cis-1,2-Dichloroethene	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,2-Dichloropropane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND

EPA 8260 - Volatile Organics

Client:	Orion Environmental	Date Sampled:	11/02/99
Project:	Monadnock	Date Received:	11/02/99
Job No.:	15591	Date Analyzed:	11/03-10/99
Matrix:	Water	Batch Number:	8260W1893
Analyst:	GR		8260W1898
			8260W1901

TB

Sample ID: m0110299-8-G		
Compounds	**DL**	µg/L
Ethylbenzene	0.5	ND
Hexachlorobutadiene	0.5	ND
2-Hexanone	10	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Methylene chloride	10	ND
4-Methyl-2-pentanone	5.0	ND
Methyl-tert-butyl ether (MtBE)	1.0	ND
Napthalene	1.0	ND
n-Propylbenzene	0.5	ND
Styrene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	1.0	ND
Tetrachloroethene	0.5	ND
Toluene	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
1,2,4-Trichlorobenzene	0.5	ND
1,1,1-Trichloroethane	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Trichloroethene	0.5	ND
1,2,3-Trichloropropane	0.5	ND
Trichlorofluoromethane	0.5	ND
Trichlorotrifluoroethane	5.0	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND
Vinyl chloride	0.5	ND
Xylenes (total)	1.5	ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID: m0110299-8-G	
Dibromofluoromethane	107
Toluene-d8	103
Bromofluorobenzene	102

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QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: 8260W1893

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	**101**	59 - 172	**Pass**
Benzene	20	**99**	66 - 142	**Pass**
Trichloroethene	20	**101**	71 - 137	**Pass**
Toluene	20	**96**	59 - 139	**Pass**
Chlorobenzene	20	**88**	60 - 133	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analyte	Spike Sample Recovery µg/L	Spike Duplicate Recovery µg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
1,1-Dichloroethene	20.1	23.0	**13%**	22%	**Pass**
Benzene	19.9	23.9	**18%**	21%	**Pass**
Trichloroethene	20.1	25.2	**22%**	24%	**Pass**
Toluene	19.3	23.3	**19%**	21%	**Pass**
Chlorobenzene	17.7	21.5	**20%**	21%	**Pass**

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Analytical Notes:

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QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: 8260W1898

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	**103**	59 - 172	**Pass**
Benzene	20	**105**	66 - 142	**Pass**
Trichloroethene	20	**105**	71 - 137	**Pass**
Toluene	20	**107**	59 - 139	**Pass**
Chlorobenzene	20	**95**	60 - 133	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: m0110299-3-G

Analyte	Spike Sample Recovery µg/L	Spike Duplicate Recovery µg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
1,1-Dichloroethene	21.3	22.5	**6%**	22%	**Pass**
Benzene	21.4	22.8	**6%**	21%	**Pass**
Trichloroethene	21.9	22.6	**3%**	24%	**Pass**
Toluene	21.2	22.4	**5%**	21%	**Pass**
Chlorobenzene	19.5	21.2	**8%**	21%	**Pass**

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

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QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: 8260W1901

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	**91**	59 - 172	**Pass**
Benzene	20	**95**	66 - 142	**Pass**
Trichloroethene	20	**96**	71 - 137	**Pass**
Toluene	20	**92**	59 - 139	**Pass**
Chlorobenzene	20	**88**	60 - 133	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analyte	Spike Sample Recovery µg/L	Spike Duplicate Recovery µg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
1,1-Dichloroethene	18.3	21.9	**18%**	22%	**Pass**
Benzene	19.1	22.4	**16%**	21%	**Pass**
Trichloroethene	19.2	22.9	**18%**	24%	**Pass**
Toluene	18.8	22.1	**16%**	21%	**Pass**
Chlorobenzene	17.5	20.4	**15%**	21%	**Pass**

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Calscience
Environmental
Laboratories, Inc.

November 10, 1999

Marilu Escher
Centrum Analytical Laboratories, Inc.
290 Tennessee Street
Redlands, CA 92373

Subject: **Calscience Work Order No.: 99-11-0123**
Client Reference: TRW-Monadnock/15591

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/03/99 and analyzed in accordance with the attached chain-of-custody.

The results in this analytical report are limited to the samples tested and any reproduction of this report must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Noel Cruise
Project Manager

William H. Christensen
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

Centrum Analytical Laboratories, Inc.		Date Sampled:	11/02/99
290 Tennessee Street		Date Received:	11/03/99
Redlands, CA 92373		Date Analyzed:	11/08/99
		Work Order No.:	99-11-0123
Attn: Marilu Escher		Method:	EPA 335.2
RE: TRW-Monadnock/15591		Page 1 of 1	

All concentrations are reported in mg/L (ppm).

	Sample Number	Cyanide Concentration	Reporting Limit
mw-4	MO110299-1	ND	0.05
mw-10	MO110299-2	ND	0.05
mw-3	MO110299-3	ND	0.05
mw-12	MO110299-4	0.09	0.05
mw-8	MO110299-5	ND	0.05
mw-11	MO110299-6	ND	0.05
mw-2	MO110299-7	0.22	0.05
mw-7	MO110299-8	ND	0.05
	Method Blank	ND	0.05

ND denotes not detected at indicated reportable limit.

Each sample was received by CEL chilled, intact, and with chain-of-custody attached.

TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES

Established 1931

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TUSTIN, CALIFORNIA 92780-7008
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REPORT

Centrum Analytical Laboratories, Inc.
290 Tennessee Street
Redlands, CA 92373
Attn: Jeff Beth

Date: November 18, 1999
Recv'd: November 3, 1999
Lab. No.: **602351**
P.O. No.: 15591

Sample: Eight (8) water samples from Site #15591 labelled:

1 MW-4 MO110299-1; 11/2/99; 0845.
2 MW-4D MO110299-2; 11/2/99; 0855.
3 MW-3 MO110299-3; 11/2/99; 1015.
4 MW-12 MO110299-4; 11/2/99; 1050.
5 MW-8 MO110299-5; 11/2/99; 1215.
6 MW-11 MO110299-6; 11/2/99; 1245.
7 MW-2 MO110299-7; 11/2/99; 1315.
8 MW-7 MO110299-8; 11/2/99; 1345.

Investigation: Analyze by EPA Method 8270M for 1,4-dioxane.

RESULTS

The data is tabulated on the following page.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Joe Bramblett, Manager
Instrumental Methods

EPA Method 8270M

Date Sampled: November 2, 1999
Date Received: November 3, 1999
Date Extracted: November 9, 1999
Date Analyzed: November 15, 1999

Micrograms per Liter (ppb)

Sample ID	1,4-Dioxane	PQL	Method Detection Limit
MO110299-1	4.7	1	0.3
MO110299-2	2.4	1	0.3
MO110299-3	3.6	1	0.3
MO110299-4	31.5	1	0.3
MO110299-5	20.8	1	0.3
MO110299-6	2.9	1	0.3
MO110299-7	46.1	1	0.3
MO110299-8	23.0	1	0.3

QC/QA Report (LCS/LCSD)

Matrix: **Water**

Date Extracted: November 9, 1999
Date Analyzed: November 15, 1999

Analyte	Amount Spiked (ug/L)	Method Blank	Amount Recovered* LCS (ug/L)	Amount Recovered* LCSD (ug/L)
1,4-Dioxane	10	ND	8.1	7.4

Analyte	Percent Recovered LCS	Percent Recovered LCSD	Acceptance Range(%)
1,4-Dioxane	81	74	50-120

ND-Not detected.

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Laboratory Report #59543

Centrum Analytical Laboratories, Inc.
M. Escher
290 Tennessee Street
Redlands , CA 92373

Samples Received
03-nov-1999 17:02:05

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
0110299-1 15591-1 (991103385) MW-4 Sampled on 11/02/99								
	11/18/99	105522	(MOD/EPA 300)	Perchlorate	ND	ug/l	4.0	1
N-Nitroso dimethylamine (NDMA)								
11/08/99	11/30/99	105961	(ML/EPA 625MOD)	N-Nitroso dimethylamine (NDMA)	ND	ng/l	2.0	1
			(Surrogate)	NDMA-D6	90.4	% Rec		
0110299-2 15591-2 (991103386) MW-4 DUP Sampled on 11/02/99								
	11/18/99	105522	(MOD/EPA 300)	Perchlorate	ND	ug/l	4.0	1
N-Nitroso dimethylamine (NDMA)								
11/08/99	11/18/99	105983	(ML/EPA 625MOD)	N-Nitroso dimethylamine (NDMA)	ND	ng/l	2.0	1
			(Surrogate)	NDMA-D6	96.1	% Rec		
0110299-3 15591-3 (991103387) MW-3 Sampled on 11/02/99								
	11/18/99	105517	(MOD/EPA 300)	Perchlorate	ND	ug/l	4.0	1
N-Nitroso dimethylamine (NDMA)								
11/08/99	11/18/99	105983	(ML/EPA 625MOD)	N-Nitroso dimethylamine (NDMA)	ND	ng/l	2.0	1
			(Surrogate)	NDMA-D6	90.1	% Rec		
0110299-4 15591-4 (991103388) MW-12 Sampled on 11/02/99								
	11/18/99	105517	(MOD/EPA 300)	Perchlorate	ND	ug/l	4.0	1
N-Nitroso dimethylamine (NDMA)								
11/08/99	11/18/99	105983	(ML/EPA 625MOD)	N-Nitroso dimethylamine (NDMA)	ND	ng/l	2.0	1
			(Surrogate)	NDMA-D6	61.2	% Rec		

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Laboratory Report #59543

Centrum Analytical Laboratories, Inc.
(continued)

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MRL	Dilution
M0110299-5 15591-5 (991103389) mw-8 Sampled on 11/02/99								
	11/18/99	105522	(MOD/EPA 300)	Perchlorate	4.5	ug/l	4.0	1
N-Nitroso dimethylamine (NDMA)								
11/08/99	11/18/99	105983	(ML/EPA 625MOD)	N-Nitroso dimethylamine (NDMA)	ND	ng/l	2.0	1
			(Surrogate)	NDMA-D6	71.7	% Rec		
M0110299-6 15591-6 (991103390) mw-11 Sampled on 11/02/99								
	11/18/99	105575	(MOD/EPA 300)	Perchlorate	ND	ug/l	4.0	1
N-Nitroso dimethylamine (NDMA)								
11/08/99	11/18/99	105984	(ML/EPA 625MOD)	N-Nitroso dimethylamine (NDMA)	ND	ng/l	2.0	1
			(Surrogate)	NDMA-D6	104	% Rec		
M0110299-7 15591-7 (991103391) mw-2 Sampled on 11/02/99								
	11/18/99	105522	(MOD/EPA 300)	Perchlorate	ND	ug/l	4.0	1
N-Nitroso dimethylamine (NDMA)								
11/08/99	11/18/99	105983	(ML/EPA 625MOD)	N-Nitroso dimethylamine (NDMA)	ND	ng/l	2.0	1
			(Surrogate)	NDMA-D6	84.6	% Rec		
M0110299-8 15591-8 (991103392) mw-7 Sampled on 11/02/99								
	11/18/99	105522	(MOD/EPA 300)	Perchlorate	ND	ug/l	4.0	1
N-Nitroso dimethylamine (NDMA)								
11/08/99	11/18/99	105983	(ML/EPA 625MOD)	N-Nitroso dimethylamine (NDMA)	ND	ng/l	2.0	1
			(Surrogate)	NDMA-D6	69.4	% Rec		

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Report
Comments
#59543

Group Comments

NDMA-d6 recovered below laboratory control limits in 2 samples. NDMA was not observed in these samples. NDMA-d6 is the internal standard used to quantitate NDMA.

(QC batch#: 105983)
Test: SURRNDMA
QC Type: LCS2
Limits incorrect in LIMS
QC Type: MS
Limits incorrect in LIMS

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Laboratory
QC Report
#59543

Centrum Analytical Laboratories,
Inc.

QC Batch #105517 Perchlorate

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 19	11100225		(0.00 - 0.00)	
LCS1	Perchlorate	20.0	19.1	95.5	(90.00 - 110.00)	
LCS2	Perchlorate	20.0	19.3	96.5	(90.00 - 110.00)	1.0
MBLK	Perchlorate	ND				
MS	Perchlorate	20.0	21.6	108.0	(75.00 - 125.00)	

QC Batch #105522 Perchlorate

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	1103389		(0.00 - 0.00)	
LCS1	Perchlorate	20.0	20.6	103.0	(90.00 - 110.00)	
LCS2	Perchlorate	20.0	18.3	91.5	(90.00 - 110.00)	12
MBLK	Perchlorate	ND				
MS	Perchlorate	20.0	17.7	88.5	(75.00 - 125.00)	
MSD	Perchlorate	20.0	19.9	99.5	(75.00 - 125.00)	12

QC Batch #105575 Perchlorate

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 99	1103389		(0.00 - 0.00)	
LCS1	Perchlorate	20.0	20.6	103.0	(90.00 - 110.00)	
LCS2	Perchlorate	20.0	18.3	91.5	(90.00 - 110.00)	12
MBLK	Perchlorate	ND				
MS	Perchlorate	20.0	17.7	88.5	(75.00 - 125.00)	
MSD	Perchlorate	20.0	19.8	99.0	(75.00 - 125.00)	11

QC Batch #105983 N-Nitroso dimethylamine (NDMA)

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	N-Nitroso dimethylamine (NDMA)	10	8.23	82.3	(70.00 - 130.00)	
LCS2	N-Nitroso dimethylamine (NDMA)	2	1.90	95.0	(70.00 - 130.00)	
MBLK	N-Nitroso dimethylamine (NDMA)	ND				

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are advisory only and not applicable for ICR monitoring.

MONTGOMERY WATSON LABORATORIES
a Division of Montgomery Watson Americas, Inc.
555 East Walnut Street
Pasadena, California 91101
Tel: 626 568 6400 Fax: 626 568 6324
1 800 566 LABS (1 800 566 5227)

Laboratory
QC Report
#59543

Centrum Analytical Laboratories,
Inc.
(continued)

MS	N-Nitroso dimethylamine (NDMA)	10	7.77	77.7	(70.00 - 130.00)	
LCS1	NDMA-d6	100	98.7	98.7	(80.00 - 120.00)	
LCS2	NDMA-d6	100	75.9	75.9	(80.00 - 120.00)	26
MBLK	NDMA-d6	100				
MS	NDMA-d6	100	76.1	76.1	(80.00 - 120.00)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are advisory only and not applicable for ICR monitoring.

Centrum Analytical Laboratories, Inc.

290 TENNESSEE STREET
REDLANDS, CA 92373

(909) 798-9336 • (800) 798-9336
FAX (909) 793-1559

Centrum Job # 15592

Chain of Custody Record

Project No.:	Project Name: TRW Monadnock	Analyses Requested
Project Manager: Jeff Gwinn	Phone: 562 988-2755 Fax:	
Client Name: (Company) TRW	Address: 4455 TORRANCE BLVD #955 TORRANCE, CA 90503	

Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	GCMS 8260 8240 8010 524.2	8080: Pesticides PCBs Pest/PCB	8015M: Diesel Fuel Screen	8015M: Gasoline 8020 Gas/BTEX	TOTAL PERCHLORATE	Semivolatiles: 8270 625	Metals: TTLC(CAM) PP RCRA	TOTAL CYANIDE	pH TDS TSS Conductivity COD	Flashpoint Fluoride Hex Chrome	TOTAL DISSOLVED CHROMIUM AND CADMIUM ONLY!	1,4 DIOXANE	NDMA	Remarks/ Special Instructions
	MO110299-1	11/2/99	0845	water	MONARNOCK		X													
	MO110299-1-B													X						
#1	MO110299-1-C																		X	
	MO110299-1-D										X									
	MO110299-1-E																X			SAMPLE WAS FILTERED IN FIELD
	MO110299-1-F																	X		
	MO110299-2		0855				X													
	MO110299-2-B													X						
#2	MO110299-2-C																		X	
	MO110299-2-D										X									

Relinquished by: (Sampler's Signature)	Date	Time	Relinquished by:	Date	Time
Chris Colley	11/2/99	1514	J. Brown	11/2/99	1635
Received by: J. Brown	11/2/99	1514	Received by:	Date	Time
			Relinquished by:	Date	Time
			Received for Laboratory by:	Date	Time

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by laboratory personnel:

Samples chilled? ☒ Yes ☐ No

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☐ Yes ☐ No

☒ Courier ☐ UPS/Fed Ex ☐ Hand carried

Turn-around time

☐ 24 Hr. RUSH*
☐ 48 Hr. RUSH*
☐ Normal TAT

* Requires prior approval, additional charges apply

Sample Disposal

☐ Client will pick up
☐ Return to client
☐ Lab disposal fee $5

Laboratory Notes: "SEND REPORT TO: MO TABON
4455 TORRANCE BLVD #955
TORRANCE, CA 90503

NOTE: 5 DAY TAT

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Client Copy

Centrum Analytical Laboratories, Inc.

290 TENNESSEE STREET
REDLANDS, CA 92373

(909) 798-9336 • (800) 798-9336
FAX (909) 793-1559

Centrum Job # 15591

Chain of Custody Record

Project No.:	Project Name: TRW - MONADNOCK
Project Manager: JEFF GWINN	Phone: Fax:
Client Name: (Company) TRW	Address:

Analyses Requested

Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	GCMS: 8240 8010 524.2	8080: Pesticides PCBs Pest/PCB	8015M: Diesel Fuel Screen	8015M: Gasoline 8020 Gas/BTEX	TOTAL PERCHLORATE	Semivolatiles: 8270 625	Metals: TTLC(CAM) PP RCRA	Lead Only TOTAL CYANIDE	pH TDS TSS Conductivity COD	Flashpoint Fluoride Hex Chrome	TOTAL DISSOLVED CHROMIUM AND CADMIUM ONLY	1,4, DIOXANE	NDMA	Remarks/ Special Instructions
#2	M0110299-2-E	11/2/99	0855	Water	MONADNOCK												X			FILTERED IN THE FIELD
	M0110299-2-F																	X		
	M0110299-3		1015				X													
	M0110299-3-B													X						
	M0110299-3-C																		X	
#3	M0110299-3-D										X									
	M0110299-3-E																X			
	M0110299-3-F																	X		
	M0110299-3-G		↓				X													MS/MSD
#4	M0110299-4	↓	1050				X													

Relinquished by: (Sampler's Signature)	Date	Time	Relinquished by:	Date	Time
Chris Cotton	11/2/99	1514	P. Bauer	11/3/99	1835
Received by: P. Bauer	Date 11/2/99	Time 1514	Received by:	Date	Time
			Relinquished by:	Date	Time
			Received for Laboratory by:	Date 11/2/99	Time 1835

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by laboratory personnel:

Samples chilled? ☑ Yes ☐ No

Custody seals? ☐ Yes ☑ No

All sample containers intact? ☑ Yes ☐ No

☑ Courier ☐ UPS/Fed Ex ☐ Hand carried

Turn-around time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☐ Normal TAT

* Requires prior approval, additional charges apply

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☐ Lab disposal fee $5

Laboratory Notes:

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Client Copy

Centrum Analytical Laboratories, Inc.

Centrum Job # 15592

290 TENNESSEE STREET
REDLANDS, CA 92373

(909) 798-9336 • (800) 798-9336
FAX (909) 793-1559

Chain of Custody Record

Project No.:		Project Name: TRW - MONADNOCK	
Project Manager:		Phone:	Fax:
Client Name: (Company) TRW		Address:	

Analyses Requested

Turn-around time:
- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☐ Normal TAT

* Requires prior approval, additional charges apply

Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	GCMS (8260) 8240 8010 524.2	8080: Pesticides PCBs Pest/PCB	8015M: Diesel Fuel Screen	8015M: Gasoline 8020 Gas/BTEX	~~418.1 (TRPH)~~ PERCHLORATE	Semivolatiles: 8270 625	Metals: TTLC(CAM) PP RCRA	~~Lead Only~~ CYANIDE	pH TDS TSS Conductivity COD	Flashpoint Fluoride Hex Chrome	DISSOLVED CHROMIUM AND CADMIUM ONLY	1,4 DIOXANE	NDMA	Remarks/ Special Instructions
#4	mo110299-4-B	11/2/99	1050	water	MONADNOCK									X						
	mo110299-4-C																		X	
	mo110299-4-D										X									
	mo110299-4-E																X			FILTERED IN THE FIELD
	mo110299-4-F																	X		
	mo110299-4-G						X													
#5	mo110299-5		1215				X													
	mo110299-5-B													X						
	mo110299-5-C																		X	
	mo110299-5-D										X									

Relinquished by: (Sampler's Signature) [signature]	Date 11/2/99	Time 1514	Relinquished by: [signature]	Date 11/2/99	Time 1635
Received by: [signature]	Date 11/2/99	Time 1514	Received by:	Date	Time
			Relinquished by:	Date	Time
			Received for Laboratory by: [signature]	Date 11/2/99	Time 1655

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by laboratory personnel:
- Samples chilled? ☑ Yes ☐ No
- Custody seals? ☐ Yes ☑ No
- All sample containers intact? ☑ Yes ☐ No
- ☑ Courier ☐ UPS/Fed Ex ☐ Hand carried

Sample Disposal
- ☐ Client will pick up
- ☐ Return to client
- ☐ Lab disposal fee $5

Laboratory Notes:

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Client Copy

Centrum Analytical Laboratories, Inc.

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FAX (909) 793-1559

Chain of Custody Record

Centrum Job # 15591

Project No.:	Project Name: TRW- MONADNOCK
Project Manager:	Phone: Fax:
Client Name: (Company) TRW	Address:

Analyses Requested

Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	GCMS: 8260 8240 8010 524.2	8080: Pesticides PCBs Pest/PCB	8015M: Diesel Fuel Screen	8015M: Gasoline 8020 Gas/BTEX	~~418.1 (TRPH)~~ PERCHLORATE	Semivolatiles: 8270 625	Metals: TTLC(CAM) PP RCRA	~~Asbestos~~ CYANIDE	pH TDS TSS Conductivity COD	Flashpoint Fluoride Hex Chrome	DISSOLVED CHROMIUM, CADMIUM ONLY	1,4 DIOXANE	NDMA	Remarks/ Special Instructions
#5	Mo110299-5-E	11/2/99	1215	water	MONADNOCK												X			FILTERED IN THE FIELD
	Mo110299-5-F																	X		
	Mo110299-6		1245				X													
	Mo110299-6B													X						
#6	Mo110299-6-C																	X		
	Mo110299-6-D										X									
	Mo110299-6-E																X			FILTERED IN THE FIELD
	Mo110299-6-F																	X		
	Mo110299-7		1315				X													
#7	Mo110299-7-B		1											X						

Relinquished by: (Sampler's Signature)	Date	Time	Relinquished by:	Date	Time
Chris Colley	11/2/99	1514	P. Bennett	11/2/99	1635
Received by: P. Bennett	Date 11/2/99	Time 15:14	Received by:	Date	Time
			Relinquished by:	Date	Time
The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.			Received for Laboratory by: Judi Betty	Date 11/2/99	Time 1635

To be completed by laboratory personnel:

Samples chilled? ☒ Yes ☐ No

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☒ Courier ☐ UPS/Fed Ex ☐ Hand carried

Turn-around time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☐ Normal TAT

* Requires prior approval, additional charges apply

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☐ Lab disposal fee $5

Laboratory Notes:

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Client Copy

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Chain of Custody Record

Centrum Job # 15592

Project No.:

Project Name: TRW- MONADNOCK

Project Manager:

Phone: Fax:

Client Name: (Company) TRW

Address:

Analyses Requested

Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	GCMS: 8260 8240 8010 524.2	8080: Pesticides PCBs Pest/PCB	8015M: Diesel Fuel Screen	8015M: Gasoline 8020 Gas/BTEX	~~418.1 (TRPH)~~ PERCHLORATE	Semivolatiles: 8270 625	Metals: TTLC(CAM) PP RCRA	~~Lead Only~~ CYANIDE	pH TDS TSS Conductivity COD	Flashpoint Fluoride Hex Chrome	DISSOLVED CHROMIUM CADMIUM ONLY	1,4 DIOXANE	NDMA	Remarks/ Special Instructions
	Mo110299-7-C	11/2/99	1315	water	MONADNOCK														X	
	Mo110299-7-D										X									
#73	Mo110299-7-E																X			FILTERED IN THE FIELD
	Mo110299-7-F																	X		
	Mo110299-7-G		↓				X													
	Mo110299-8		1345				X													
	Mo110299-8-B													X						
#83	Mo110299-8-C																		X	
	Mo110299-8-D										X									
	Mo110299-8-E	↓	↓	↓													X			FILTERED IN THE FIELD

Turn-around time
- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☐ Normal TAT

* Requires prior approval, additional charges apply

Relinquished by: (Sampler's Signature)	Date	Time	Relinquished by:	Date	Time
Chris Cotter	11/2/99	1514	P. Bowler	11/4/99	1635
Received by:	**Date**	**Time**	**Received by:**	**Date**	**Time**
P. Bowler	11/2/99	1514			
			Relinquished by:	**Date**	**Time**
			Received for Laboratory by:	**Date**	**Time**
				11/2/99	1635

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by laboratory personnel:
- Samples chilled? ☑ Yes ☐ No
- Custody seals? ☐ Yes ☑ No
- All sample containers intact? ☑ Yes ☐ No
- ☑ Courier ☐ UPS/Fed Ex ☐ Hand carried

Sample Disposal
- ☐ Client will pick up
- ☐ Return to client
- ☐ Lab disposal fee $5

Laboratory Notes:

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Client Copy

Centrum Analytical Laboratories, Inc.

15591

Centrum Job #

290 TENNESSEE STREET
REDLANDS, CA 92373
www.centrum-labs.com

(909) 798-9336 ● (800) 798-9336
FAX (909) 793-1559
lab@centrum-labs.com

Chain of Custody Record

Project No:

Project Name: TRW - MONADNOCK

Project Manager:

Phone: Fax:

Client Name: (Report and Billing) TRW

Address: (Report and Billing)

Please Circle Analyses Requested

Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	8015M: Diesel, Fuel Screen, Carbon Chain	8015M: Gas only	8021B: BTEX/MtBE ONLY	418.1 (TRPH), 413.2		GCMS: 8260B, 8021B, 624, 524.2	GCMS: MtBE Conf. Only	GCMS: 8270C, 625	8080: Pesticides, PCBs, Pest/PCB		Metals: Title 22 (CAM), RCRA, PP	pH, TDS, TSS, Conductivity	Flashpoint, Hex Cr	1,4 DIOXANE	Remarks/Special Instructions
#8	MO110299-8-F	11/2/99	1345	water	MONADNOCK															X	
	MO110299-8-G	1	—	1	1							X									

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☐ Normal TAT

*Requires PRIOR approval, additional charges apply

Requested due date: _____

	Date:	Time:
1) Relinquished by: (Sampler's Signature) Chris Cotley	11/2/99	1514
2) Received by: D. Bender	11/2/99	1514
3) Relinquished by: D. Bender	11/2/99	1635
4) Received by:		
5) Relinquished by:		
6) Received for Laboratory by:	11/2/99	1635

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by Laboratory personnel:

Samples chilled? ☒ Yes ☐ No ☐ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☒ Courier ☐ UPS/Fed Ex ☐ Hand carried

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☐ Lab disposal

Laboratory Notes:

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy